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**ERRATUM**

*V.B.* **22,** [No. 9.] Abst. 2789. Author's name: for "WANATABE, M.", please read "WATANABE, M." The same correction should be made in the Index to Authors.

The Executive Council of the Commonwealth Agricultural Bureaux is a signatory to the Fair Copying Declaration details of which can be obtained from the Royal Society, Burlington House, London, W.1.

Bulletins on disease subjects written for farmers and "popular" articles of a similar nature are not included in the *Veterinary Bulletin*. Those of a sufficiently important nature are, however, included in *Index Veterinarius*; so also are certain review articles, presidential addresses, congress proceedings, etc., where the title conveys as much information as could be given in an abstract of a few lines. For information of this nature, readers of the *Veterinary Bulletin* are referred to *Index Veterinarius,* where titles of all publications indexed by the bureau are fully cross-referenced.

A list of annotations and reviews, classified according to subject, is now given in *Index Veterinarius,* being inserted at the end of each number. Such papers will not necessarily be dealt with in the *Veterinary Bulletin.*

The Editor will be glad to receive publications relating to Veterinary Science and cognate subjects in order that they may be dealt with in the *Veterinary Bulletin.*

Reports of Departments, Special Reports, reprints, etc., etc., should be sent as soon as they are issued.

**Books for Review.**

The Editor will be glad to receive books for review in the *Veterinary Bulletin.*

COMMONWEALTH BUREAU OF ANIMAL HEALTH

THE

# VETERINARY BULLETIN

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## DISEASES CAUSED BY BACTERIA AND FUNGI

I & II. HACKENTHAL, H. & BIERKOWSKI, E. (1951). Streptococcenstudien. II & III. **[Studies on streptococci. II & III.]**—*Zbl. Bakt. I. (Orig.)* **156,** 556-581; **157,** 419-439. [For part I, see *V.B.* **22,** 2341.] 3031

I. An account of the use of the special media previously described for the recognition of *Str. lactis,* enterococci, *"Str. viridans",* pneumococci and haemolytic streptococci. It is claimed that the series of plates prepared as described are of special value in the differentiation of organisms of these groups.

II. A discussion of the use of the special media for the detection of mixed infections and the study of variations in colonial form and behaviour.—E. G. WHITE.

RABL, R. & SEELEMANN, M. (1949). Über das Vorkommen bestimmter "unvollständig haemolysierender" Streptokokken- und Diplokokkenarten bei Mensch und Tier sowie über ihre Bedeutung als Infektionserreger. **[Occurrence of certain incompletely haemolytic types of streptococci and diplococci in man and animals.]**—*Zbl. Bakt. I. (Orig.)* **154,** 186-206. 3032

Strains of streptococci showing α and γ haemolysis were isolated from cerebrospinal fluid, mouth and tonsils, blood (sepsis), small intestine, gall bladder, duodenum, urine and some other sites in man. Four strains were also examined from domestic animals—brain abscess in a calf (diplococcus, Group I), cow's milk (diplococci, Groups I and III) and uterine mucus of a mare (diplococcus, Group I). The possible pathogenicity of these organisms was discussed.—E. G. WHITE.

NEAVE, F. K., PHILLIPS, M. & MATTICK, A. T. R. (1952). **Clinical mastitis in six herds freed from** *Streptococcus agalactiae.*—*J. Dairy Res.* **19,** 14-30. 3033

In the six herds studied, 64% of clinical mastitis cases were caused by staphylococci and 2% by *Str. agalactiae,* and the high incidence of staphylococcal and of clinical mastitis appears to have been related to the type of milking machine in use.

The authors showed that in these herds *Str. agalactiae* spread more rapidly than had been reported in certain herds where segregation was practised, and suggested that the treatment of clinical cases only is insufficient to keep the incidence of infection at a very low level.—CLIVE BRIGGS.

LANCASTER, J. E. & STUART, P. (1951). **Further experimental infections of the bovine udder with** *Streptococcus agalactiae.*—*Vet. Rec.* **63,** 141-145. 3034

In a series of experiments on 31 cows, infection of the udder was attempted by infusion, hand milking or machine milking. The susceptibility to infection was shown to be dependent mainly on the number of previous lactations and on previous infections.

—A. MAYR-HARTING.

SOMPOLINSKY, D. (1950). Impetigo contagiosa suis. **[Impetigo in pigs in Denmark.]**—*Maanedsskr. Dyrlaeger.* **61,** 401-432 & 433-453. [Abst. from English summary.] 3035

S. surveyed the literature on impetigo-like affections in domestic animals and described cases that had occurred recently in Danish pigs. Over 30% of pigs inoculated with material from affected pigs died. A non-haemolytic coagulase-negative and mannitol-negative micrococcus related to *Micrococcus epidermidis* (Winslow & Winslow) Hucker was considered to be the causative agent. Attempts to produce a vaccine against the disease failed. Neither penicillin nor a culture of *Lactobacillus* in milk were of value for treatment.

NOTE.—*The* V.B. *references given in square brackets now refer to abstract numbers and not to page numbers.*

GLEDHILL, A. W. & REES, R. J. W. (1952). **A spontaneous enterococcal disease of mice and its enhancement by cortisone.**—*Brit. J. exp. Path.* **33**, 183-189. [Authors' summary copied *verbatim.*] 3036

An entero-hepatitis of mice due to an enterococcus is described. The disease can be produced experimentally by intraperitoneal or intravenous inoculation of the organism or by feeding it. The susceptibility to the experimental disease is increased by cortisone.

EASTERBROOKS, H. L. & PLASTRIDGE, W. N. (1952). **Management of vibriosis.**—*Jen-Sal J.* March, pp. 18-19. 3037

A pamphlet advocating the addition of 500 µg. per ml. dihydro-streptomycin sulphate to diluted semen for use in artificial insemination and the intra-uterine injection of streptomycin, aureomycin or terramycin for infected cows, preferably streptomycin.—C. C. BANNATYNE.

WARD, B. Q. & LEE, A. M. (1948). **Viability of *Vibrio fetus* in petrolatum.**—*J. Amer. vet. med. Ass.* **112**, 227-228. 3038

The authors emphasized the need to subculture *V. fetus* repeatedly when attempting to maintain it in the laboratory and described attempts at preservation by suspension in yellow soft paraffin. Surface growths of three strains were either flooded with the soft paraffin or washed off into tubes of oil, half of the tubes being maintained at room temperature and half of them in the refrigerator. Twice weekly blood agar plates were streaked from the tubes or plates.

Viable oganisms were obtained up to 25, 28 and 33 days from all three strains when protected by oil either in tubes or applied directly to the plates, whereas untreated plates survived only from 5–7 days. Temperature of storage had no effect on survival.—E. J. H. FORD.

NÈGRE, L. & BRETEY, J. (1952). Infection tuberculeuse abortive du cobaye déterminée par l'inoculation de une ou quelques unités de bacilles tuberculeux jeunes ou de produits pathologiques humains prélevés chez des sujets suspects de tuberculose ou atteints de cette maladie. **[Non-progressive TB. in g. pigs caused by inoculation with young cultures of tubercle bacilli of human origin or with infected material from lesions.]**—*Ann. Inst. Pasteur.* **82**, 132-144. 3039

Injection into g. pigs of minimum doses of young cultures of tubercle bacilli, or of small doses of material from lesions caused a non-progressive infection characterized by absence of lesions in the organs, by transient allergy, and by enlargement of the tracheobronchial lymph nodes.—W. R. BETT.

HEATLEY, N. G., GOWANS, J. L., FLOREY, H. W. & SANDERS, A. G. (1952). **The effect on experimental tuberculosis and other infections of a micrococcin-triton solution.**—*Brit. J. exp. Path.* **33**, 105-122. [Authors' summary copied *verbatim.*] 3040

The almost insoluble antibiotic micrococcin can be solubilized in various synthetic detergents. "Solutions" of micrococcin (5 mg./ml.) in Triton WR-1339 (10 mg./ml.), an almost non-toxic detergent of the non-ionic type, were used in the present work.

The detergent does not influence the growth of bacteria, but it partly antagonizes the antibacterial action of micrococcin. Repeated large intravenous doses of micrococcin-Triton solution damage the glomeruli of the kidney. Small doses have no such action and appear to be non-toxic.

The distribution of micrococcin can be followed in frozen sections by its purple fluorescence in ultra-violet light. Immediately after intravenous injection in the solubilized form micrococcin is present in considerable amounts in the lung, but after 2–3 days it becomes distributed in the pattern typical of particulate micrococcin, i.e., in the cells of the reticulo-endothelial system, especially in the spleen and liver. It probably does not penetrate into the fluids of tissues or into tubercles in significant amounts.

Assay of micrococcin in ethanol extracts of the organs confirms the histological observations. The content of micrococcin is greatest in liver and spleen, and the substance can still be detected in these organs after 5 months.

Mice infected with *Str. pyogenes* are to some extent protected by the administration intravenously of micrococcin-Triton solutions, but organisms are seldom eliminated completely.

The course of experimental tuberculosis and the nature of the lesions in guinea-pigs are not significantly influenced by repeated intravenous injections of micrococcin-Triton solution.

CORNFORTH, J. W. & LONG, D. A. (1952). **Influence of organic phosphates on tuberculin sensitivity in BCG. infected guineapigs. Relation to cortisone desensitisation.**—*Lancet.* **262**, 950-952. [Authors' summary slightly modified.] 3041

Using the response to intradermal tuberculin as a measure of allergic hypersensitivity in albino g. pigs infected with B.C.G., it was found that: (1) Single subcutaneous injections of very

small quantities of glucose-l-phosphate, and of lysergic acid diethylamide, diminish sensitivity. It is suggested that the latter causes an accumulation of hexose monophosphate responsible for desensitisation. (2) Injected reduced glutathione prevents the desensitising action of cortisone acetate, alloxan, ascorbic acid, and dehydroascorbic acid, but not of glucose-l-phosphate, N-acetylsphingosine and the polyoxyethylene ethers. The relation of these findings to the mechanism of cortisone desensitisation are discussed.

The authors' present hypothesis provides what they believe to be a useful, though probably oversimplified, summary of the mechanism of cortisone desensitisation. They suggest that cortisone facilitates the oxidation of ascorbic to dehydroascorbic acid. Dehydroascorbic acid inhibits phosphoglucomutase, and as a result glucose-l-phosphate accumulates in the tissues and is intimately concerned with desensitisation.

LEECH, F. B. & PATERSON, A. B. (1952). **The effects of thyroxine and thiouracil on the tuberculin reactions of guinea-pigs.**—*J. Endocrinol.* **8,** 96-101. [Authors' summary copied *verbatim.*] 3042

Three groups of twelve guinea-pigs were selected from a batch inoculated with a live culture of BCG. Two of these groups were selected for treatment with thyroxine and thiouracil. The third served as untreated controls. The experiment was divided into three periods; in the first, groups I and III received thyroxine and thiouracil respectively; in the second, all drug treatment was discontinued; in the third, the treatments were reversed, thiouracil being given to group I and thyroxine to group III. All guinea-pigs were injected intradermally with OT and PPD tuberculins at the end of the first and third periods; the diameters of the 24 hr. lesions were analysed by the appropriate statistical methods.

Thyroxine and thiouracil had opposite effects on the reactions to PPD tuberculin, the former depressing the average response. Effects on the reactions to OT were irregular. There were no significant effects on the fresh weights of the adrenal glands.

LEMAISTRE, C. & TOMPSETT, R. (1952). **The emergence of pseudotuberculosis in rats given cortisone.**—*J. exp. Med.* **95,** 393-408. [Authors' summary modified.] 3043

The emergence of a severe infection in albino rats during cortisone administration is reported. Evidence is present that the causative agent of the disease was *Corynebacterium murium*, a microbial species not demonstrably a part of the usual bacterial flora of the host. It has been possible to reproduce the disease in rats by a relatively large infecting inoculum of this strain of *Corynebacterium*, but the susceptibility of normal rats to infection has been found to be low.

The disease occurred in 41 of 50 rats given cortisone and in 28 of 30 instances in which isolation of the aetiological agent was attempted, this strain of *Corynebacterium* was recovered. The disease was characterized by widespread necrotizing lesions with multiple coalescent lesions occurring in the lungs, and similar, though smaller lesions of the pericardium, pleurae, liver, and kidneys. In its gross appearance the pulmonary disease was similar to that of a disseminated, far advanced tuberculous process. The histological appearance of the lesions, however, was sufficiently distinctive so that they could be readily differentiated from the lesions characteristically produced by *Mycobacterium tuberculosis*. Moreover, the host-parasite relationship established by the experimental infection with avian type tubercle bacilli, was not markedly altered by the factors which led to the emergence of the pseudotuberculosis.

In contrast to the high frequency of pseudotuberculosis in rats given cortisone, no instance of this disease has been encountered in a similar group of animals given large quantities of corticotropin.

DELAY, P. D. & KOCH, B. (1950). **Results of penicillin treatment during an outbreak of erysipelas in turkeys.**—*J. Amer. vet. med. Ass.* **117,** 142-143. [Authors' summary copied *verbatim.*] 3044

Penicillin in wax failed to protect turkeys against natural infection with *Erysipelothrix rhusiopathiae*. Of the birds given a simultaneous treatment of penicillin G potassium, 50,000 units, and penicillin in wax, 150,000 units, 80 per cent recovered.

Transmission to susceptible turkeys apparently resulted following exposure to affected birds in the same pen or when the affected and non-affected birds were separated only by a wire fence. Birds in pens containing toms only became infected, while those in mixed pens, hens and toms, remained free from infection despite a similar opportunity for exposure. Debeaking seemed to be of little value in preventing the spread of infection.

GELENCZEI, E. & SZENT-IVÁNYI, T. (1951). Zur Hämagglutinationsfähigkeit der Rotlaufstäbchen. [**Haemagglutination by** *Erysipelothrix*

*rhusiopathiae.*]—*Acta vet. hung.* **1,** 55-62. [In German. Russian summary.] 3045

Some cultures of *E. rhusiopathiae* develop haemagglutinins if grown in serum media. Only six out of 165 S strains, but 23 out of 57 R strains, obtained from the above S cultures, agglutinated fowl erythrocytes. Antisera inhibited this action specifically.

—A. Mayr-Harting.

Katitch, R. V. (1952). Examen de la valeur immunigène des vaccins contre le rouget du porc d'après Muromcev et Traub. [**Comparison of the immunizing value of the Muromcev and Traub swine erysipelas vaccines.**]—*Bull. Off. internat. Epiz.* **37,** 49-55. 3046

Comparative experiments on mice show that the vaccine prepared according to the method described by Traub have better immunological properties than vaccines prepared by the technique described by Muromcev.

—G. V. Laugier.

Ödegaard, B., Grelland, R. & Hendriksen, S. D. (1952). **A case of *Listeria* infection in man transmitted from sheep.**—*Acta med. scand.* **142,** 231-238. [In English. Authors' summary modified.] 3047

A 54-year-old farmer who had been in close contact with sheep got a fatal infection with *Erysipelothrix* (*Listeria*) *monocytogenes,* with meningitis and bronchopneumonia. Two months later a sheep on his farm developed encephalitis, caused by a strain of identical cultural, biochemical and serological properties.

The authors suggest that the infection was transmitted to the patient from sheep, and that there must have been healthy carriers among his sheep at the time when he contracted the infection. The strain was highly sensitive to aureomycin *in vitro.*

Vittoz, R. (1950). Morve-malléine-whitmorine en Sud Indochinois. [**Glanders in southern Indo-China. Mallein and whitmorin tests.**]—*Rev. vét. milit.* **5,** 32-49. 3048

Glanders is enzootic in northern Indo-China, particularly in the provinces bordering on China, but it is rare or non-existent in the military horses of southern Indo-China, because of differences in climate and other factors; clinical cases occur only exceptionally.

The author gave details of the mallein prepared at the Institut Pasteur in Paris and diluted and issued by the Institut Pasteur of Nhatrang. He discussed economic means for dealing with the disease.

*Pfeifferella whitmori* infection has not yet been seen, but may be expected to make its appearance at any time in southern Indo-China.

—W. R. Bett.

Deyhimi, S. & Katai, A. (1951). Recherches sur le traitement de la morve des équidés en Iran. [**Treatment of glanders in horses in Persia.**]—*Bull. Acad. vét. Fr.* **24,** 449-454. 3049

The authors made trials of treatment using various sulphonamides in combination with "anamorve" or mallein; they regard oral sulphamethazine plus mallein as the treatment of choice.—G. P. Marshall.

Deyhimi, S. & Khatai, A. (1951). Le traitement de la morve équine en Iran. [**Treatment of glanders in Persia.**]—*C. R. Acad. Sci., Paris.* **233,** 894-896. 3050

The authors reported that a combination of sulphamethazine *per os* and mallein subcutaneously cured glanders in horses and mules.

—W. R. Bett.

Hirsch, E. A (1952). **Salmonellosis in foals.**—*Irish vet. J.* **6,** 315-316. 3051

An outbreak of enteritis involving ten foals occurred in a Thoroughbred stud. Four foals died; *S. enteritidis* (var. *dublin*) was isolated from the faeces of one foal during life. Of the drugs used, chloromycetin only was effective. The source of infection was not known.

—E. J. H. Ford.

Soltys, M. A. (1951). **A selective medium for the isolation of organisms of the salmonella group.**—*J. comp. Path.* **61,** 237-240. 3052

The criteria for a satisfactory selective medium were discussed and a medium designed to fulfil these conditions was described, having the composition: 3% nutrient agar 700 ml. and sodium taurocholate 5 g.—these are stored in 70 ml. amounts after adjusting the pH to 7·2; neutral red ·05 g.; brilliant green 0·5 g.; acid fuchsine 0·5 g.; boiled milk 300 ml. S. claimed that this medium was more inhibitory to non-pathogens and less inhibitory to pathogens than was sodium desoxycholate medium.

—K. G. Towers.

Hupka, E. & Behrens, H. (1951). Untersuchungen über die Leptospirose des Pferdes. [**Leptospirosis in horses.**]—*Dtsch. tierärztl. Wschr.* **58,** 245-248. 3053

Of 124 horses admitted to the Hanover clinic 58 were positive, 22 suspicious and 44 doubtful to the agglutination–lysis test for leptospirosis. Reaction to *L. grippo-typhosa* occurred most often (91·4%), followed by *L. icterohaemorrhagiae* (15·5%); *L. pomona*

(8·6%); *L. canicola* (6·9%) and *L. sejroe* (3·4%) were less common and there were a number of mixed infections. The data were analysed in respect of clinical disease, nutrition and sex: there was a higher proportion of positive and suspicious reactions in geldings.—E. G. White.

Führer, F. (1951). Über die Auswertung der serologischen Leptospirendiagnostik. [**Serological diagnosis of leptospirosis.**]—*Zbl. Bakt. I.* (*Orig.*) **157,** 103-107. Discussion pp. 107-109. 3054

F. discussed the value of the complement-fixation and agglutination tests for the diagnosis of leptospirosis in man. In discussion on the paper, Kathe referred to leptospirosis in dogs and horses in East Germany. Examples were given of infection of man from dogs with *L. canicola*. Some serological findings in horses were quoted in support of the view that periodic ophthalmia is a manifestation of leptospirosis and that subclinical infections are common.

—E. G. White.

O'Connell, P. J. & Broom, J. C. (1952). **Weil's disease. A cautionary tale.**—*Lancet* **262,** 1088-1090. [Authors' summary copied *verbatim*.] 3055

A boy aged 15 developed an illness which in the fourth week was shown to be leptospirosis. Agglutination reactions suggested canicola fever rather than Weil's disease, and the boy's dog showed evidence of recent infection by *L. canicola*. But later tests established the diagnosis as Weil's disease. The infection in the dog was fortuitous.

The boy had been working in wet mud which could easily have been contaminated with rat's urine. Rats caught near his home were found to carry *L. icterohaemorrhagiae*.

This story illustrates the need for caution in diagnosis when a patient's serum reacts with more than one species of leptospira.

Coffey, J. H., Dravin, I. & Dine, W. C. (1951). **Swineherd's disease (aseptic meningitis) due to** *Leptospira pomona*.—*J. Amer. med. Ass.* **147,** 949-950. 3056

An account of *L. pomona* infection in the U.S.A., the clinical picture being that of an aseptic meningitis. The author considers that as more agglutination tests for *L. pomona* are done in cases of iridocyclitis, aseptic meningitis and influenza-like diseases, this organism will probably be found to be more frequent and widespread than heretofore believed.

Burrows, W. (1951). **Kinetic aspects of hemolysis by the α-toxin of** *Clostridium welchii* **and its inhibition by antitoxin.**—*J. infect. Dis.* **89,** 233-251. 3057

The activity of the haemolysis *in vitro* by *Cl. welchii* may be measured by the spectrophotometric determination of liberated haemoglobin, as ferri haemic acid, and is specifically inhibited by homologous antibody. The present study, using the α-toxin of *Cl. welchii*, is concerned with the relations between toxin concentration, antitoxin concentration and red cell concentration and the effect of these variables on the velocity of the warm (37°C.) phase of the lysis. The toxin was stable in dilute solution in the presence of 0·1% bovine albumin, the optimum pH was 6·0 and the chosen buffer M/100 acetate. The titration procedure was described. The relation between toxin concentration and percentage haemolysis was represented by an S-shaped curve that was markedly asymmetrical. When percentage haemolysis was plotted against log toxin concentration in μg, the relation was linear between the limits of 20 to 70% haemolysis. Red cell concentration was inversely related to percentage haemolysis and directly related to absolute haemolysis. The velocity of the warm phase reaction was directly related to both toxin and red cell concentrations. These and other findings reported were held to be consistent with the assumption that α-toxin haemolysis is an enzyme-catalysed reaction, but not as proof that haemolysis results from enzymatic activity.—K. J. Sinclair.

Randall, C. C., Orr, M. F. & Schell, F. G. (1951). **Detection by tissue culture of an organism resembling** *Histoplasma capsulatum* **in an apparently healthy horse.**—*Proc. Soc. exp. Biol., N.Y.* **78,** 447-450. 3058

The authors reported the isolation in culture of intracellular organisms resembling *H. capsulatum* from the apparently normal amnio-allantoic membrane and the spleen of a mare.

Flores, del F., C. H. & Brncic, J. D. (1948). Moniliasis renal espontanea en cuy (Cavia cobaya). Accion patogena experimental. [**Spontaneous renal moniliasis in g. pigs.**]—*Agric. Téc., Chile.* **8,** 87-111. [English summary.] 3059

An account of *Candida albicans* infection in a g. pig stock.

*See also abstr.* **3154** (TB. and brucellosis in Bulgaria); **3236** (report, Australia); **3237** (report, Southern Rhodesia); **3242** (report, Republic of Ireland); **3244** (report, U.S.A.).

## DISEASES CAUSED BY PROTOZOAN PARASITES

THANNER, F. (1951). Infektionsversuche an Jungrindern mit Reinkulturen der Geschlechtstrichomonade des Rindes. [**Infection of heifers with *Trichomonas foetus* cultures.**] —*Inaug. Diss., Munich.* pp. 31. [Abst. from summary.] 3060

T. stated that transmission of *Tr. foetus* by contact is possible but unlikely and, experimentally, is impossible by injection into the blood stream. He gave details of the progress of infection in ten heifers and cows from service with an infected bull, and from cervical inoculation with a pure culture of *Tr. foetus*.

—M. L. CLARKE.

MARTHEDAL, H. E. & TORP-JACOBSEN, P. (1951). Om virkningen af sulfapraeparater m. m., spec. sulfabenzpyrazin (sulfachinoxalin), over for experimentelt fremkaldt blindtarmscoccidiose. [**Sulphonamides, especially sulphaquinoxaline, in experimental caecal coccidiosis.**]—*Nord. Vet.-Med.* **3**, 127-146. [In Danish. English and German summaries.] 3061

Experiments on chicks 3–4 weeks old inoculated with sporulating oocysts of *Eimeria tenella* gave the following results: (a) sulphamethylthiodiazole 0·2% or (b) mepacrine hydrochloride 0·05% in drinking water had no effect. (c) Sulphabenzpyrazine 0·05% in food 48 hours after infection was less effective than when given at 0·025% or 0·04% in drinking water, these amounts having the same effect (except 72 hours after infection, when 0·025% was ineffective). (d) Sulphadimidine 0·2% or sulphapyrazine 0·1% gave only the same effect as 0·025% sulphabenzpyrazine. Both sulphabenzpyrazine and sulphapyrazine gave a blood level of about 6 mg. % after eight hours when administered at 0·04% and 0·1% respectively in water.

Results are quoted for a natural case of coccidiosis.—F. R. HARRIS.

SWALES, W. E. (1952). **The role of chemotherapy in the control of coccidiosis of chickens.** —*Rep. XIVth. Internat. vet. Congr.* **2**, 9-15. [French and German summaries.] 3062

Mass production of chickens necessitates the use of coccidiostatic drugs. A table of such drugs with the rationale of their action, is given and there is a list of the efficient drugs and their dosage for different phases of an imminent or actual outbreak.

A method of exposing susceptible chicks to floors contaminated with coccidia and concurrent medication, is described.

—JAS. G. O'SULLIVAN.

GUIMARÃES, L. M., DE ARAUJO, T. L. & DE LACERDA, P. M. G., JR. (1950). Ocorrência da nutaliose em equinos puro sangue de corridas, em São Paulo. [**Piroplasmosis in Thoroughbred horses in S. Paulo.**]—*Rev. Fac. Med. vet., S. Paulo.* **4**, 357-361. [English abstract.] 3063

An account of the diagnosis of *Babesia equi* infection in race horses. Cures were readily obtained with single subcutaneous injections of acaprin.—J. EDWARDS.

DSCHUNKOWSKY, E. (1952). **Remarks on theilerioses and *Theileria*.**—*Parasitology.* **42**, 70-73. 3064

A further contribution to the question of true species in the genus *Theileria*. The virulence of the parasite and the particular tick vector are only indirect evidence of species validity. The relationship of Koch's blue bodies to the erythrocytic stages and the facts underlying the development of tissue stages, are not fully understood. D. described the development of *Theileria* in the red cells and maintained that the ring-shaped forms could be demonstrated in *Th. annulata,* and *Th. dispar* and probably in all species except *Th. parva.*

—JAS. G. O'SULLIVAN.

WILSON, S. G. (1950). **An experimental study of East Coast fever in Uganda. I. A study of the type of East Coast fever reactions produced when the number of infected ticks is controlled. II. The durability of immunity in East Coast fever.**—*Parasitology.* **40**, 195-209 & 210-214. 3065

I. When the number of infected ticks, *Rhipicephalus appendiculatus,* present in the paddock was high, 80% of the calves died from acute East Coast fever. When the ears were sprayed with acaricidal solutions, mortality was considerably reduced. Further reduction of the tick population resulted in mild, non-fatal reactions. When benzene hexachloride was fed to susceptible calves, the severity of the reactions to tick infection depended on the tick control afforded.

II. Mild transient infections were produced in six calves. In five of these, second attacks followed re-infestation by infected ticks, the time interval being 1–16 months. The longer the interval, the more severe the second attack. Durability of immunity depended on the severity of the original attack.

—BERYL A. THURSTON.

MANWELL, R. D., COULSTON, F., BINCKLEY, E. C. & JONES, V. P. (1945). **Mammalian and avian *Toxoplasma*.**—*J. infect. Dis.* **76,** 1-14. 3066

A series of experiments were carried out with the purpose of defining some of the characteristics of avian and mammalian strains of *Toxoplasma*.

When a strain isolated from a child and maintained in mice by intracerebral or intraperitoneal passages was injected by various routes into a series of mammals, birds and also frogs, a series of different types of infections were observed. Acute and chronic types occurred in both birds and mammals, but in the frogs no evidence of infection could be established. The symptoms produced in the different species were recorded.

Intraperitoneal injection of the parasites into pregnant mice caused death in most cases and parasites were recovered from the litters. It was concluded that congenital transmission of the disease was possible.

When infected tissues were fed to mice and canaries, typical toxoplasm infections developed. Although food contaminated with faeces from infected mice failed to produce infections when fed to normal mice, washings from the intestines of the infected mice when fed to or injected into normal mice initiated typical infections. The eating of infected food may therefore be another way in which the infection could be transmitted.

In survival tests, it was found that toxoplasms could be frozen in dry ice and alcohol and thawed in thin pyrex glass tubes. Typical infections were produced by the surviving parasites. Toxoplasms were very easily killed by 5% phenol and 70% ethyl alcohol and no evidence of the existence of resistant stages could be observed.

From a comparison of avian and mammalian strains, it was concluded that slight morphological differences exist. In tissue smears the mammalian type more often occurred in pairs and the avian type generally produced notches in the nucleus of the invaded cell. Toxoplasms of birds were reported to occur chiefly in the lymphocytes and macrophages, whereas the mammalian type may parasitize any type of cell in the reticulo-endothelial system, and a variety of others also. Pseudocysts were not observed in the avian strains, nor was encephalitis a characteristic symptom. The mammalian strain when introduced into birds appeared to retain all its characteristics and sparrows infected with the avain strain were not immune to the mammalian strain.—L. P. JOYNER.

VON ZEIPEL, G. & LINDER, L. A. (1951). **Toxoplasmosis. A serological investigation with dye test.**—*Acta path. microbiol. scand.* **29,** 229-238. [In English. Abst. from authors' summary.] 3067

In a comparative study the dye test [*V.B.* **19,** 1845] proved superior to the egg neutralization test, which must be regarded rather as a qualitative reaction. Complement fixation gives a good indication of the antibody content of the serum, but it is less sensitive than the dye test. Non-specific reactions may occur both in the egg neutralization and in the complement-fixation tests. Sera from 1,923 persons were examined by the dye test. Of the sera from mainly male blood donors, about 37% gave a positive reaction in the dilution 1:10. Of the sera from pregnant women of corresponding age distribution, 49% gave a positive reaction in this dilution. In 84 cases the dye test gave a positive reaction with serum dilutions of 1:250 or higher. Of these persons 19 were clinically healthy; the remainder had varying symptoms. As the antibody titre can be significantly increased for a long time after inapparent as well as after manifest toxoplasmosis there was probably often no connexion between the disease in question and the demonstrated antibodies against toxoplasmosis. A relatively large number of patients had enlarged lymph nodes, with or without fever. Histopathological examination revealed a non-specific lymphadenitis in nine of these cases. Attempts to transmit the disease to mice by the inoculation of lymph node material from three of the patients failed.

HOLZ, J. (1951). Eine Studie über die Möglichkeit der Invasion von Protozoen in die Peritonealhöhle von Goldhamstern unter Versuchsbedingungen. [**The possibility of protozoan invasion into the peritoneal cavity of golden hamsters.**]—*Z. Parasitenk.* **15,** 155-158. 3068

H. identified nine protozoa from 40 healthy golden hamsters, and found that intestinal protozoa penetrate into the abdominal cavity through damaged intestinal wall and from an artificially infected vagina. Blood protozoa enter the peritoneal cavity from the surrounding capillaries.—M. L. CLARKE.

*See also abst.* **3237** (report, Southern Rhodesia).

## DISEASES CAUSED BY VIRUSES AND RICKETTSIA

Geiger, W. (1950). Die Pluralität des Maul- und Klauenseuchevirus und die westdeutsche Epizootie 1948/49. **[Types of virus of foot and mouth disease in the West-German epidemic of 1948-49.]**—*Tierärztl. Umsch.* **5,** 401-407. 3069

This is a detailed account of virus strain typing work done during the 1948-49 outbreak of F. & M. disease in Western Germany. Out of 340 samples dealt with, O type virus was isolated from 158 and A type virus from 99, the rest being doubtful. These two types were infecting cattle during the same period, but were separate and not mixed; this rendered the vaccine work very arduous.—J. Edwards.

Divo, A., Palacios, C. & Lugo, A. (1950). La fiebre aftosa (glosopeda) en Venezuela. **[Foot and mouth disease in Venezuela.]**—*Bol. Inst. Invest. vet., Caracas.* **4,** 579-597. 3070

An account of an investigation into a highly contagious vesicular eruptive disease of cattle and swine. The experimental work which excluded stomatitis and fixed the diagnosis as F. & M. disease was described. The virus was identified in England as Type O.—J. Edwards.

Schneider, B. & Kosch, W. (1951). Prüfung und Differenzierung eines Maul- und Klauenseuche-Stammes aus Venezuela. **[Typing of a foot and mouth disease strain from Venezuela.]**—*Berl. Münch. Tierärztl. Wschr.* No. 2. pp. 36-38. 3071

A report of work done to establish a diagnosis of F. & M. disease in connexion with an outbreak in Venezuela in 1950 [see preceding abst.]. The virus type was designated $O_3$, indicating a minor immunological difference from two European O strains which were used in the identification work. A stock vaccine made from the European strains conferred satisfactory protection against the Venezuelan virus.

—J. Edwards.

Michelsen, E. & Thiesen, K. S. (1951). Et varierende mund- og klovesygevirus fra Venezuela. Forsøg over typedifferentieringens sikkerhed. **[A variant type of foot and mouth disease virus from Venezuela. Reliability of typing.]**—*Nord. Vet.-Med.* **3,** 1061-1072. [In Danish. English and German summaries.] 3072

Immune g. pigs proved unsuitable for differentiation of an O variant from Venezuela. It was suggested that additional tests other than complement fixation are necessary in vaccine producing laboratories.—G. V. Laugier.

Pehl, K.-H. (1951). Über charakteristische Veränderungen der Maul- und Klauenseuche an den Prädilektionsstellen nach Vakzinierung. **[A characteristic lesion at a predilection site after vaccination with foot and mouth disease virus.]**—*Exp. Vet.-Med.* **3,** pp. 84-89. 3073

In a study on leucocytosis response to infection with F. & M. disease, young pigs were vaccinated subcutaneously with Riems adsorbate vaccine, were killed 20–70 hours later and sections of their tongues were examined after staining by Gräff's oxydase method. This revealed an intense accumulation of leucocytes in the epithelium, which was at its height 48 hours after vaccination. Control injections of adsorbate vehicle without virus caused no such local leucocytosis. The vaccine is thus able to cause an abortive glossitis.—J. Edwards.

Basset, J. (1951). Fièvre aphteuse (F.A.) Faillite de la vaccination pour sa prophylaxie. **[The failure of vaccination as a means of control of foot and mouth disease.]**—*Bull. Acad. vét. Fr.* **24,** 459-463. 3074

B. quoted statistics which show that vaccination is only a palliative and can never be a means of eradication. British methods of control are looked upon with envy and are quoted as the only possible means. French experience with vaccination, the problems of variant strains, and breakdown of "immune" barriers are quoted in the course of argument.

—G. V. Laugier.

Möhlmann, H. (1950). Die aktive Immunisierung des Schweines gegen Maul- und Klauenseuche. **[Immunization of pigs against foot and mouth disease.]**—*Exp. Vet. Med.* **2,** pp. 79-85. 3075

F. & M. disease vaccine made from virus collected from cows gives hardly any protection to pigs. Vaccine from a virus adapted to the pig protects both pig and cattle. A particularly high yield of vaccine with protective powers for cows and pigs can be obtained if 50% swine-adapted virus is added to the virus with which the cows are infected for vaccine purposes.

—A. Mayr-Harting.

Rottgardt, A. A. & Pirazzi, A. J. G. (1949). Algunas observaciones sobre la accion colorante cristal violeta sobre el genero brucella. **[The action of crystal violet on *Brucella* spp. —significance in preparation of F. & M.**

**disease vaccine.**]—*Rev. Med. vet., B. Aires.* **31,** 246-253. 3076

It is important to use healthy animals, free from brucella infection, in the preparation of crystal violet vaccine for F. & M. disease, since *Brucella* species are able to survive in citrated blood after five days' incubation at 37°C. and at least eight days in the refrigerator at 3–5°C. in the presence of the dilution of crystal violet used in vaccine production.—I. W. JENNINGS.

HOBOHM, K. O., FORREST, G. E. & PETERMANN, H. G. (1951). Análisis químico de vacunas antiaftosas adsorbidas. [**Chemical analysis of foot and mouth disease adsorbate vaccines.**]—*Gac. Vet., B. Aires.* **13,** 203-211. [English and German summaries.] 3077

Analytical procedures are described for the determination of alumina, ammonium ion ($NH_4$), glycine, total and free formaldehyde, and adsorbed protein-nitrogen; also methods for determining *p*H and buffer capacity. Chemical analysis is intended as a supplement to serological analysis; it has revealed considerable differences in composition between various types of F. & M. disease vaccines.—K. J. SINCLAIR.

GRAHAM-CUMMING, G. & RIX, J. C. (1952). **Outbreak of rabies in Hong Kong.**—*Vet. Rec.* **64,** 105-111. 3078

A serious outbreak of rabies in Hong Kong during 1949-52 was described in detail. Infection originated from dogs smuggled from China. A detailed analysis of the outbreak was presented showing age and sex incidence of human cases, sources of infection, age group distribution in relation to incubation, locality and status of infected dogs. The severity of the outbreak was ascribed to irresponsibility of the public towards regulations. The effects of prophylaxis were described; 8% failures were reported.

—G. V. LAUGIER.

DÜWER-DOHRMANN, I. (1951). Über die derzeitige Tollwutepizootie zwischen Oder und Elbe. [**Rabies in the territory beween the rivers Oder and Elbe, Germany.**]—*Berl. Münch. tierärztl. Wschr.* No. 12. pp. 239-241. 3079

A statistical survey showing a great increase in the disease in wild and domestic animals, and man, during 1950-51.—ROY MACK.

PRESNALL, C. C. (1950). Observaciones sobre el control de los animales predatores en la campaña antirrábica. I. El programa federal de los Estados Unidos. [**Predatory animals and control of rabies. I. The federal programme of the U.S.A.**]—*Bol. Ofic. sanit. panamericana.* **29,** 290-291. [English summary.] 3080

It is considered that the best method of controlling wild-life rabies is by keeping the population of coyotes and other carnivores at a consistently low level, in order to avoid epidemic spread of disease.—I. W. JENNINGS.

YOUNG, K. S. (1950). Algunos aspectos regionales del problema de la rabia en Estados Unidos. I. La situactión de la rabia en Texas. [**Regional aspects of rabies control in the U.S.A. I. The position in Texas.**]—*Bol. Ofic. sanit. panamericana.* **29,** 281-285. 3081

The State of Texas has a higher incidence of rabies in animals than any other state in the Union, and the incidence is increasing. In 1948, there were 1,200 positive laboratory diagnoses in animals, and over 3,500 courses of antirabic injections were given to human beings. There seems to be no valid reason why the disease should not be brought under control.

—I. W. JENNINGS.

BACHARAN, M., MAVROGLU, N., ICHILDAR, B. & UNEL, S. (1952). Vaccin anticlaveleux sensibilisé sec. [**A dried sensitized sheep-pox vaccine.**]—*Bull. Off. internat. Epiz.* **37,** 56-60. 3082

The technique employed in preparing a dried sensitized sheep pox vaccine was described. Diluted 1 : 10 in tap water and injected in doses of 0·25 ml. intradermally it gave an immunity of five and a half months. The vaccine remained viable for seven months.

—G. V. LAUGIER.

BURNET, F. M. (1950). **A genetic approach to a study of influenza viruses.**—*Trans. N.Y. Acad. Sci.* Ser. II. **13,** 2-4. 3083

The hypothesis was put forward that genetically significant sub-units are derived from the influenza virus, which duplicate independently in the susceptible cell. Subsequently, new aggregates of each necessary type of genetic unit are formed from the 'pool' and reconstitute the 'infective particles'.—W. R. BETT.

VON MAGNUS, P. (1951). **Propagation of the PR8 strain of influenza A virus in chick embryos. III. Properties of the incomplete virus produced in serial passages of undiluted virus.** —*Acta path. microbiol. scand.* **29,** 157-181. [In English.] 3084

The author found that the 'incomplete' virus obtained by serial transfer of undiluted allantoic fluid is antigenically closely related to,

though not necessarily identical with, the normal fully active virus: when present in high concentration, the 'incomplete' virus interfered with the propagation of the infective virus. Infection in mice or in eggs could not be initiated with the 'incomplete' virus alone.

—Clive Briggs.

I & II. Liu, O. C. & Henle, W. (1951). **Studies on host-virus interactions in the chick embyro-influenza virus system. IV. The role of inhibitors of hemagglutination in the evaluation of viral multiplication. V. Simultaneous serial passage of the agents of influenza A and B in relation to variations in the growth cycle of influenza B virus.**—*J. exp. Med.* 94, 269-289 & 291-304. 3085

III. Henle, W. & Liu, O. C. (1951). **Studies on host-virus interactions in the chick embryo-influenza virus system. VI. Evidence for multiplicity reactivation of inactivated virus.**—*Ibid.* 305-322. 3086

I. Using both *in vivo* and *in vitro* tests it was shown that inhibitors of haemagglutination may interfere with the proper evaluation of virus multiplication in the allantoic cavity. The inhibitor reduces the haemagglutinin titre, is destroyed by active or irradiated virus and can be studied by the adsorption-elution curve technique.

II. Although influenza viruses of types A and B readily interfere with each other in the chick embryo the authors confirmed that under suitable conditions both viruses could be traced together through ten transfers. Both viruses developed independently but the haemagglutinin titres in the mixed series were lower than when either virus was used separately. The time required for the growth cycle of influenza virus B varied with the dose, being prolonged by dilution.

III. Influenza viruses A and B, partially inactivated by ultra-violet irradiation or by heating at 56°C., were shown to be capable of regaining their ability to propagate in the allantoic membrane. The results indicate that reactivation occurs only when one host cell absorbs more than one non-infective virus particle. These findings are very similar to those observed by other workers in the bacteriophage–*Bact. coli* system.—E. G. White.

Wenner, H. A., Kamitsuka, P., Krammer, M. C., Cockburn, T. A. & Price, E. R. (1951). **Encephalitis in the Missouri River basin. II. Studies on a focal outbreak of encephalitis in North Dakota.**—*Publ. Hlth Rep., Wash.* 66, 1075-1085. [Authors' summary copied *verbatim*.] 3087

A study has been made of an outbreak of encephalitis in Barnes County, North Dakota, during the summer of 1949. Evidence has been adduced to the effect that in a small geographic area three distinct types of central nervous system illnesses prevailed during a brief period of time. Poliomyelitis and Western equine encephalitis occurred. Pertinent, however, is the fact that the majority of those ill did not have antibodies for the recognised neurotropic viruses present in this area, indicating the probable existence of a third neurotropic virus, not as yet detected and identified.

Silber, L. A. & Šubladze, A. K. (1946). **[Japanese B encephalitis and louping-ill.]**—*Zh. Microbiol. Epidemiol. Immunobiol.* 6, 23-32 [In Russian. German summary.] [Abst. from abst. in *Zbl. Bakt. I.* (*Ref.*) 147, 368. 3088

The viruses both of Japanese B encephalitis and of louping-ill are highly pathogenic for sheep by intracerebal inoculation, but differ in their incubation times and clinical features. It is assumed that, in louping-ill, the Purkinje cells are the first cells of the central nervous system to be affected, whereas in Japanese B encephalitis they are affected later. The viruses have some antigens in common, as demonstrated in neutralization tests, but there is no cross immunity. An outbreak of encephalitis in sheep in Russia was observed which on clinical, pathological and epidemiological grounds had to be diagnosed as louping-ill. The sera of human beings and wild animals in that district gave a high neutralization titre with the virus of louping-ill and a much lower one with the virus of Japanese B encephalitis.

—A. Mayr-Harting.

Röhrer, H. & Möhlmann, H. (1950). Experimenteller Beitrag zur Frage der natürlichen Ansteckung bei infektiöser Anämie der Pferde. **[The mode of infection in equine infectious anaemia.]**—*Mh. Vet.-med.* 5, 179-182. 3089

In an insect-free stable two horses proved healthy by inoculation tests on horses and kept under observation for nine weeks, were maintained for six months in close contact and under very bad hygienic conditions (dung removed only once a month) with two artificially infected horses, these being replaced when necessary. Of six of the deliberately infected horses, four died of E.I.A. within the period of the experiment and one afterwards. The two exposed horses

remained healthy. One had two elevations of temperature 39·2°C. morning and evening and the other had elevations of 38·8°C. at an interval of two weeks. No other signs of the disease were observed. After the contact experiment both horses were inoculated with 10 ml. of virulent serum from an infected horse. One had a first attack lasting five days, 17 days after inoculation and a second attack two weeks later, and the disease then became latent; the second horse had an attack 12 days after inoculation lasting four days and when killed at the end of the attack showed a typical pathological and histological picture.

The authors were unable to transmit the disease by putting bandages soaked with serum of tested virulence on to the fetlocks nor by massaging virulent serum into the skin of the neck, both horses being kept insect-free.

—W. Steck.

Bosnić, L. & Rapić, S. (1951). Prinos poznavanju grudne zaraze konja. **[Equine pleuropneumonia.]**—*Vet. Arhiv.* **21,** 473-496. [Abst. from German summary.] 3090

Between 1942 and 1946, 100 cases of equine pleuro-pneumonia were diagnosed and treated in the Zagreb district of Yugoslavia. The disease mostly took the typical course. In the majority of cases, the initial localization was near the ventro-caudal border of the lung. X-ray examination provided the earliest evidence of the disease in some cases (80 of the horses were X-rayed at regular intervals during the course of the disease).

Injection of neosalvarsan generally produced rapid regression of the lung infiltration, resolution being complete within about a week.

—G. P. Marshall.

Fukusho, K. & Furuya, K. (1949). **[Haematological studies on rinderpest.]**—21st *Rep. Govt. exp. Sta. Anim. Hyg., Tokyo.* 1949. pp. 27-45. [Abst. from English summary.] 3091

In cattle with acute rinderpest there was haemoconcentration, both erythrocyte count and haemoglobin being above normal. The blood cell sedimentation rate was slowed. The white blood corpuscles fluctuated in number during acute rinderpest, but were preponderantly increased in number. There was a shift to the left in the differential count.

—J. Edwards.

Hunter, W. M. D. (1952). **Some observations on malignant catarrh.**—*Irish vet. J.* **6,** 279-283. 3092

This is a clinical article which describes bovine malignant catarrh and quotes eight individual case histories. H. has regularly found helminth eggs in animals with this disease though no figures of egg counts are mentioned. He claims success for a treatment consisting of the administration of cobalt salts followed by phenothiazine and copper sulphate.

—K. G. Towers.

McEwen, A. D. (1951). **Virus abortion in ewes.**—*Ann. rep. Anim. Dis. Res. Ass.* pp. 16-20. [Gilmerton, Midlothian: Moredun Institute.] 3093

Vaccination gives promise of being an effective method of control, but M. believes that it would be better to attempt to control the disease by altering husbandry, especially avoiding lambing pens. Surprisingly the vaccine appears to have some curative properties.

—G. B. S. Heath.

Dalling, T. (1951). **Diseases of animals. Enzootic abortion in ewes.**—*J.R. agric. Soc.* **112,** 153-154. 3094

A short review.—G. B. S. Heath.

Quin, A. H. (1950). **The past and future of hog cholera control.**—*J. Amer. vet. med. Ass.* **116,** 411-415. 3095

Tracing the evolution of biological methods for the control of swine fever in the U.S.A., Q. emphasized that the goal must be eradication of the disease, and appealed for a wider use of dead vaccines where applicable to avoid spreading the virus.

[No reference was made to the place of lapinized strains of virus in the future control of the disease.]—J. T. Done.

Bindrich, H. (1950). Untersuchungen über den Virusgehalt des Blutes und der Organe bei Hundestaupe. **[The virus content of blood and tissues in canine distemper.]**—*Exp. Vet.-Med.* **2,** pp. 73-78. 3096

Comprehensive studies were carried out in artificially infected dogs. In the blood the virus is carried mainly in the red corpuscles and it was estimated that at least one in 10,000 r.b.c. may contain a virus unit.

The virus content of the body organs is not directly related to that of the blood. The tissues which contain most virus are the bone marrow, spleen and brain.—J. Edwards.

Dräger, K. & Schindler, R. (1951). Grundsätzliches zur Handhabung und Auslegung von Staupe-Experimenten und über einen Modell-Versuch an Hund und Frettchen.

**[Experimental research on distemper in dogs and ferrets.]**—*Mh. prakt. Tierheilk.* 3, 273-283. 3097

For the evaluation of distemper experiments it is indispensable to be able to rule out accidental infection with distemper and the presence of any secondary infection. A description of the Distemper Experimental Station at the Behring Werke was given and the selection and handling of experimental animals was described. A mixed infection in dogs should be suspected if the second rise of temperature is as high as the first, or even if the first rise is above 41°C. In one case of this sort both *Leptospira canicola* and *Salmonella choleraesuis* were found besides distemper virus. Following the accidental infection of a dog that fell ill during the quarantine period five more dogs were found to be harbouring the virus; these dogs were in the same room, but separated by walls 2 m. high. The uselessness of an allegedly specific therapeutic substance was established in carefully controlled experiments.

—A. Mayr-Harting.

Goret, P., Brion, A. & Joubert, L. (1950). Caractères pathogènes pour le furet de virus isolés de névraxe de chiens présentant des signes cliniques de "hard-pad disease". **[Pathogenicity of "hard-pad" disease virus for ferrets.]**—*Bull. Acad. vét. Fr.* 23, 313-319. 3098

The characteristics of the infection set up in ferrets inoculated with material from cases of "hard pad" disease are described. They appeared to be a combination of those resulting from the inoculation of material from "classical" canine distemper infection and those believed to have been set up by inoculation of material from cases of infectious canine hepatitis [see preceding abst.]. As a working hypothesis it was suggested that a double infection of classical dog distemper virus and of the virus of infectious canine hepatits may occur in dogs.

—A. N. Worden.

Goret, P., Joubert, L. & Buffet, A. (1950). Transmission probable au furet du virus de l'hépatite contagieuse du chien (Rubarth) ou fox encephalitis (Green). **[Transmission to the ferret of the virus of infectious canine hepatitis.]**—*Bull. Acad. vét. Fr.* 23, 305-311. 3099

It is believed that the virus of infectious canine hepatitis was successfully transmitted to ferrets, but the possibility of contamination with another virus was not excluded.

—A. N. Worden.

Lesbouyries, G. (1951). **Fowl plague** [Newcastle disease] **in France.**—*Off. Rep. 9th World's Poult. Congr., Paris.* 1, 9-15. 3100

L. described the clinical symptoms of different forms of Newcastle disease during outbreaks in France from 1948-50. He considers that the disease can be easily diagnosed by its highly infective nature. The problem of its relationship to true fowl plague and methods of prophylaxis were discussed.—A. H. Linton.

Atanasiu, P. & Gareau, G. (1951). Essais sur l'évolution des anticorps dans la maladie de Newcastle après la vaccination. **[The development of antibodies after vaccination against Newcastle disease.]**—*Ann. Inst. Pasteur.* 80, 674-677. 3101

With one injection of 2 ml. of a vaccine obtained from the chorio-allantoic fluid and formolized, it is possible to cause the formation of antibodies in chickens. Those antibodies can be demonstrated by inhibition of haemagglutination and in neutralization tests.

—A. Mayr-Harting.

Cox, H. R. (1951). **Some recent advances and current problems in the field of rickettsial diseases.**—*Arch. ges. Virusforsch.* 4, 518-533. [In English.] 3102

C. discussed the development of vaccines against rickettsial infections. The infected yolk sac contains rickettsia in far greater quantities than tissue culture, chick embryo or chorio-allantois. An improvement on the killed yolk-sac vaccine would be a living attenuated vaccine and work in that direction is in progress. In the section on Q fever, C. stated that many of the ticks used for the preparation of a vaccine against Rocky Mountain spotted fever, were naturally infected with Q-fever rickettsia. An outbreak of Q fever occurred among the staff of the National Institute of Health. The staff of the rickettsial disease unit had been immunized against *R. rickettsi* infection (Rocky Mountain spotted fever) with a tick tissue vaccine and of the personnel at the Institute they alone escaped infection during the outbreak. The action of antibiotics, particularly of aureomycin, against rickettsial toxins was discussed.

—A. Mayr-Harting.

Mayer, H. (1949). Beobachtungen zu einer Q-Fieber-Schlachthausepidemie in Württemberg. **[Q fever in Würtemberg abattoir.]**—*Dtsch. med. Wschr.* 74, 1476-1477. 3103

Clinically healthy cattle formed the source of infection in this epidemic. The organisms probably pass from the extreta *via* the hides to man, either by direct touch or by dust-inhala-

tion. These methods of infection may also apply from one animal to another. Contagious transmission from man to man was not observed.
—W. R. Bett.

Windel, T. (1952). Queensland-Fieber (Q-Fieber) in einem ledererzeugenden Betrieb. **[Q fever in a tannery.]**—*Leder.* **3**, 71-72. 3104

A worker in a German tannery using dried Balkan sheepskins developed Q fever. Methods of diagnosis, treatment, and prevention are described.—S. E. Fox.

Herzberg, K. & Urbach, H. (1951). Untersuchungen mit europäischen Q-Fieber-Antigenen. I. **[A study of European Q fever antigens.]**—*Z. ImmunForsch.* **108**, 376-388. 3105

The Mediterranean strains, Grita and Henzerling, gave different agglutination and complement-fixation responses from three German strains. The relation between complement-fixing and agglutinating antibodies in the sera of patients was not consistent.—W. R. Bett.

Le Gac, P. & Giroud, P. (1950). Trois cas de fièvre exanthématique provoquée par Rickettsia burneti en Oubangui-Chari (Afrique équatoriale française). **[Three cases of a disease clinically resembling typhus caused by *R. burneti* in Oubangui Chari (French Equatorial Africa.)]**—*C.R. Acad. Sci., Paris.* **230**, 1711-1713. 3106

For the first time *R. burneti* was found in three human cases to be the cause of a typhus-like disease with a rash and lung symptoms. This strain produced a similar disease in monkeys, and was pathogenic for g. pigs, rabbits and rats. Antigenically the strain was closely related to an American strain of *R. burneti*.—A. Mayr-Harting.

Babudieri, B. & Moscovici, C. (1952). **Experimental and natural infection of birds by *Coxiella burneti*.** [Correspondence.]—*Nature, Lond.* **169**, 195-196. 3107

A positive complement fixation reaction is recorded in avian sera after experimental inoculation with *Rickettsia burneti*. The reaction is transient and g. pig inoculation has shown that birds giving a negative result may harbour the infection in their kidneys. It is suggested that birds which frequent farmyards may play a part in the epidemiology of Q fever and this is supported by the finding of positive serum reactions in pigeons and a goose from an area where the disease had been diagnosed. Negative sera were noted from birds in an area where no cases of animal or human Q fever had been found.—K. G. Towers.

Kausche, G.-A. & Hoffmann-Berling, H. (1951). Zur Morphologie des Achsenzylinders beim Warmblüter und seine Beziehungen zu neurotropen Viren. **[Morphology of the axis cylinder in mammals and its connexion with neurotropic viruses.]**—*Arch. ges. Virusforsch.* **4**, 424-441. 3108

The purpose of this work was to gain some information on the relationship between neurotropic virus and the structure of the neuron. Axons from the central nervous system of normal mice and of mice inoculated intraperitoneally with viruses of the MM, EMC and Lansing group were examined with the electron microscope. In the normal axons the authors found very small fibres, diameter 3–4 m$\mu$. The axons of infected animals show well-defined changes, but it was impossible to find any virus particles in them by electron-optical methods. As the virus is present in the neurons in an infectious form, this form must be different from that in purified virus suspensions.
—A. Mayr-Harting.

Bang, F. B. & Gey, G. O. (1951). **Viruses and cells—a study in tissue culture applications.**—*Trans. N.Y. Acad. Sci.* Ser. II. **13**, 324-327. 3109

The entrance of virus into a cell in tissue culture consists of more than penetration of the theoretical membrane: it may involve inclusion of the virus particles within fluid taken into the cell by pinocytosis or uptake by the waving frills of some cells. Study of continuous lines of cell cultures shows some of the factors influencing multiplication of virus. An attempt is being made to analyse with the electron microscope the changes produced in cells by various viruses. In eastern equine encephalomyelitis some cells contain so many virus particles that most of the cytoplasm seems to be converted into virus. At the same time, some destroyed cells contain few particles. The method of escape of virus from a cell into a new one is discussed.
—W. R. Bett.

Endo, M. (1950). A propos de la conservation des virus dans le liquide d'oeuf. **[The conservation of viruses in liquid egg.]**—*Jap. J. exp. Med.* **20**, 817-822. [In French.] 3110

A number of viruses of human and animal origin, including rabies, equine encephalomyelitis and Rift Valley Fever, survived longer when preserved in liquid egg than in 50% glycerin (commercial, adjusted to pH 7·0 with

NaOH). The virus of Rift Valley fever retained its full virulence for 150 days in liquid egg: when stored in glycerin its virulence fell rapidly and after 40 days it was no longer infective for mice at a dilution of $10^{-3}$. "Liquid egg" was prepared by mixing the contents of one fresh egg with one tenth its volume of saline, filtering through gauze and transferring to tubes which were heated three times at 56°–58°C. for 30 min. on successive days. Infective tissues were added and the tubes closed with wax and stored at 4°–5°C.—E. G. White.

*See also absts.* **3126-3127** (an ultra-virus in "venereal sarcoma" in dogs); **3133** (carcinomas from virus-induced papillomas); **3134** (induction of tumours by sarcoma virus); **3154** (Newcastle disease in Bulgaria); **3235** (report, Canada); **3237** (report, Southern Rhodesia); **3238** (report, Gambia Colony).

## IMMUNITY

Michon, P. (1951). Variantes du test indirect de Coombs dans les syndromes hémolytiques. **[Variations of the Coombs test in haemolytic disease.]**—*C.R. Soc. Biol., Paris.* **145,** 1104-1106. **3111**

M. reported that a serum giving a positive indirect antiglobulin test may appear negative when diluted even so little as five parts serum with one part diluent. [The diluent used is often inert human serum and the details of technique are not sufficiently detailed entirely to exclude neutralization of the antiglobulin serum by the diluent as an explanation.]

—G. Fulton Roberts.

Brion, A. (1951). Sur le mécanisme de l'immunisation de la jument mulassière par son produit. Lésions utéro-placentaires. **[Immunization of mares, used for mule breeding, by their offspring. Lesions in uterus and placenta.]**—*C.R. Acad. Sci., Paris.* **232,** 2158-2159. **3112**

B. described the histological structure of scattered lesions of the placenta in mares used for mule breeding. These lesions, vaguely resembling cotyledons, round or oval, flat, and about 1–1·5 cm. in diameter, form a breach in the normal placental barrier. By allowing the passage of maternal antibodies to foetal red cell antigen, they my be responsibe for the development of haemolytic jaundice in the new-born.

—I. W. Jennings.

Young, L. E., O'Brien, W. A., Miller, G., Swisher, S. N., Ervin, D. M., Christian, R. M. & Yuile, C. L. (1951). **Erythrocyte-isoantibody reactions in dogs.**—*Trans. N.Y. Acad. Sci.* Ser. II. **13,** 209-213. **3113**

Six antigenic factors in canine blood were studied and haemolytic disease of new-born puppies was produced. Transfusion of blood of incompatible groups was fairly well tolerated.

—John Seamer.

Cohen, S. G., Mayer, L. D. & Criep, L. H. (1951). **The experimental production of arteritis by passive sensitization.**—*J. Immunol.* **66,** 487-496. **3114**

Extensive pulmonary panarteriolar and periarteriolar infiltration of eosinophiles was observed in rabbits, passively sensitized with 5 ml. of rabbit anti-horse serum and given 15 ml. of horse serum 1–100 intravenously in divided doses.—W. R. Bett.

Millberger, H., von Brand, V., Gehrmann, K. & Tauscher, L. (1949). Ein Modellversuch für das Studium des cyklischen Infektionsgeschehens und allergischer Erkrankungen. **[Cyclic infection and allergic diseases.]**—*Zbl. Bakt. I.* (*Orig.*) **154,** 167-177. [English, French and Russian summaries.] **3115**

The authors' thesis is that it is possible to produce the typical picture of an infectious disease in all its stages with any antigen if it is applied continuously in small doses. Groups of g. pigs were injected subcutaneously at three-hourly intervals day and night with 0·1 ml. horse serum. In a control group "normosal" (an isotonic salt mixture) was injected instead. In the "normosal" animals the temperature fluctuated only between 38·6° and 38·9°C. In the serum animals the temperature rose for five days to a daily mean of 39·9°C. and the daily fluctuations increased. The temperature then fell until the normal temperature was reached on the 26th day. It remained normal although the serum injections continued for a further 12 days. The leucocytes increased parallel to the temperature and showed a shift to the left. The authors conclude that, in this way, it is possible to study sensitization anaphylactic symptoms and immunity and antianaphylaxis as parts of the same process.—A. Mayr-Harting.

*See also absts.* **3041-3042** (B.C.G.); **3045** (haemagglutination by *E. rhusiopathiae*); **3046** (swine erysipelas vaccines); **3054** (serological diagnosis of leptospirosis); **3067** (toxoplasmosis: serological dye test); **3068** (protozoan invasion of hamsters); **3074** (failure of vaccination in F. & M. disease); **3075** (F. & M. disease vaccine for pigs); **3076** (*Brucella* infection and crystal violet vaccine for F. & M. disease); **3132** (mouse milk and mammary carcinoma).

## PARASITES IN RELATION TO DISEASE [ARTHROPODS]

WOKE, P. A. (1951). **A rabbit-ear cage for blood-sucking arthropods.** — *Publ. Hlth Rep., Wash.* **66,** 464-471. 3116

The cage in the shape of an inverted truncated cone was made from transparent celluloid. The top and any necessary openings were covered with wire-mesh. The apparatus, adaptable for one or both ears, was attached to the rabbit's head at the base of the ears by collodion.

The apparatus had been tested for some two years and was found suitable for the feeding, culture, observation and study of lice, bugs, fleas, ticks and mites. A photograph shows the apparatus *in situ* and a diagram illustrates its construction.—JAS. G. O'SULLIVAN.

PIRES, F. A. (1950). **Aspects of the antiglossinic fight in Mozambique. A control experiment of the** *G. brevipalpis* **Newst on the valley of the Maputo River. Relationship between** *G. brevipalpis,* **Newst, and the hippopotamus on the Maputo valley—Portuguese East Africa.**—*Bur. Interafr. Tsetse. B.P.I.T.T.* No. 143/0. pp. 9. 3117

Removal of the hippopotamus from 78 sq. miles on the river bank caused a considerable reduction in tsetse population. Subsequent dipping of cattle (D.D.T. with benzene hexachloride) almost entirely exterminated *G. brevipalpis.*

—BERYL A. KAY.

*See also abst.* 3236 (report, Australia).

METIANU, T. (1951). Contribution à l'étude des ixodidés de Roumanie. **[The ixodid ticks of Roumania.]**—*Ann. Parasit. hum. comp.* **26,** 446-463. 3118

M. studied the occurrence and distribution in Roumania of seven species of ticks on domestic animals; in all 40,000 specimens were examined. The life histories of *I. ricinus, Dermacentor reticulatus* and *Haemaphysalis punctata* were studied on experimental animals. *H. concinna* was reported for the first time in Roumania. *H. punctata* was found to be a vector of *Anaplasma centrale.*

—JAS. G. O'SULLIVAN.

GUILHON, J. (1950). Propiedades acaricidas de los insecticidas clorados. **[Acaricidal properties of chlorinated insecticides.]**—*Rev. Med. vet., B. Aires.* **32,** 83-88. 3119

G. discussed the action of D.D.T. against ixodid and argasid ticks, and benzene hexachloride (B.H.C.) against blood-sucking acarids. The $\gamma$-isomer was a less effective acaricide than technical B.H.C., which in turn was inferior to the $\gamma$-$\delta$ mixture. The acaricidal values of a sulphur derivative of B.H.C., and of chlorinated terpene derivatives were discussed.

—K. J. SINCLAIR.

## PARASITES IN RELATION TO DISEASE [HELMINTHS]

MACKIE, A. & RAEBURN, J. (1952). **The effect of some oxidation products of phenothiazine on liver fluke (*Fasciola hepatica*) *in vitro*.**—*Brit. J. Pharmacol.* **7,** 215-218. [Authors' summary modified.] 3120

Phenothiazone, thionol, and phenothiazine sulphoxide, oxidation products of phenothiazine, were prepared and tested at various concentrations against *F. hepatica in vitro.*

Phenothiazone had a lethal effect at a concentration of 1:8,000 and was paralysant at 1:16,000. Thionol and phenothiazine sulphoxide had only paralysant effects at 1:1,000 and 1:4,000 respectively.

CARGNEL, A. (1950). Fattori epidemici ed epizootici su di una epizoozia da echinococco nel maiale. **[An outbreak of echinococcosis in pigs.]**—*Nuova Vet.* **26,** 68-70. 3121

Echinococcus cysts were absent from 600 pig carcasses examined in the Calabritto municipality between 1928 and 1934. From December 1935 to February 1936, echinococcus cysts were present in 42 out of 60 pig carcasses examined in a part of the same municipality. After 1936 the incidence decreased. C. discussed the reasons for the variation in incidence. The number of sheep and goats and of dogs affected had remained constant.—L. BADIALI.

TAYLOR, E. L. & MICHEL, J. F. (1952). **Inhibited development of *Dictyocaulus* larvae in the lungs of cattle and sheep.** [Correspondence.]—*Nature, Lond.* **169,** 753. 3122

A short note to record the finding of undeveloped earliest fifth stage *Dictyocaulus* larvae in the lungs of resistant cattle and sheep several weeks or months after natural or artificial infection.—M. L. CLARKE.

WHITTEN, L. K. & SALISBURY, R. M. (1951). **Note on the occurrence of gapeworm** (*Syn-*

*gamus trachea*) **in New Zealand.**—*Aust. vet. J.* **27,** 291-292. 3123

The authors confirmed the presence of *S. trachea* in New Zealand, the first case being reported from a "pictorella finch" (*Donacola pectoralis*) in an aviary. From the same aviary the parasite was subsequently recovered from a "parson finch" (*Poephila cincta*) and from a waxeye (*Zosterops lateralis*). The parasite was also found in four out of nine starlings(*Sturnus vulgaris*) and in a blackbird (*Turdus merula*) trapped in the same locality. It has not been seen in domestic poultry in New Zealand.

—B. A. Forsyth.

Keller, P. & Hide, C. G. (1951). **Incidence and relative viability of *Ascaris* ova at sewage disposal works in the Johannesburg area.**—*S. Afr. med. J.* **25,** 338-342. 3124

Egg counts were made on raw and digested sewage. Abattoir waste and raw nightsoil were also examined separately. There was a very high incidence of *A. lumbricoides* in the latter. Sewage sludge could be converted into a safe fertilizing material by heat treatment, but it was concluded that only treatment of the human carriers of *Ascaris* and improvements in their living conditions will reduce the incidence of disease.

—Beryl A. Kay.

*See also abstr.* **3236** (report, Australia); **3237** (report, Southern Rhodesia); **3240** (report, Cyprus).

## SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

de Mello, M. T. (1949). **Cholesteatomas of the choroid plexus of Equidae. Report on 14 cases.**—*Mem. Inst. Osw. Cruz.* **47,** 347-353. [In English. Abst. from authors' summary.] 3125

The author discussed the aetiology of cholesteatomas of the choroid plexus, the lateral ventricles, the cerebrum and of the base of the cerebellum in Equidae; of 38 animals examined 14 were affected. He stated that these were the first cases to be recorded in Brazil. A lesion was also found in a mule.

I. Nanta, Marquès, Lasserre, Bazex, Bru, Puget, Vallée, M. & Borrel, A.-J. (1951). Les tumeurs vénériennes du chien. Embryoculture d'un ultra-virus. [**So-called "venereal sarcoma" of the dog. Embryo culture of an ultra-virus.**]—*Rev. Méd. vet. Lyon et Toulouse.* **102,** 262-265. 3126

II. Nanta, Marquès, Lasserre, Bazex, Bru, & Puget. (1951). Les tumeurs vénériennes du chien. Étude thérapeutique. [**Treatment of so-called "venereal sarcoma" in dogs.**]—*Rev. Méd. vet. Lyon et Toulouse.* **102,** 321-337. 3127

I. Mortality of varying incidence occurred in groups of chick embryos inoculated in serial passage with filtrates from embryos originally receiving filtered, and in one instance unfiltered, material from so-called "venereal sarcomas" in dogs. The results of inoculation of material from some of these embryos in two young female dogs will be reported later.

II. The authors gave details of their experience of successful X-ray treatment of so-called "venereal sarcomas" in dogs, and described the clinical and histological changes during treatment.—E. Cotchin.

Das, M. S. (1951). **Lymphoid leukaemia in dogs—some observations, including a case treated with synthetic oestrogen.**—*Indian vet. J.* **28,** 63-83. 3128

D. recorded lymphatic leucaemia in dogs in India, giving detailed records of some cases. He gave a brief account of the results of administration of stilboestrol to one dog.

Willis, R. A. (1947). **Teratomas and mixed tumours in animals and their bearings on human pathology.**—*Proc. R. Soc. Med.* **40,** 635-636. [Only abst. given. Abst. from abst.] 3129

Mixed tumours of adult tissues, embryonic tumours and teratomas are three distinct kinds of tumours which occur in animals. It is suggested that the experimental study of the properties of the various components of these tumours by serial transplantation might yield valuable information.—T. W. F. Pay.

Boyland, E. (1952). **Effects of radiations and radiomimetic drugs.**—*Endeavour.* **11,** 87-91. [Author's summary copied *verbatim*.] 3130

Recent research has brought to light several marked similarities between the biological effects of certain vesicants and carcinogenic compounds and those of X-rays and similar ionizing radiations. Both kinds of agent, for example, may inhibit tumours and yet be carcinogenic; both may reduce the white cell count of the blood. These noteworthy effects, which are of great potential significance in the treatment of cancer, may, despite their very different origins, be due to a common action in changing nucleic acid or other cell constituents.

Hertz, R. (1951). **The relationship between hormone-induced tissue growth and neo-**

**plasia: a review.**—*Cancer Res.* **11,** 393-397. 3131

Recently, neoplasms in rats treated with growth hormone have been reported. Thyreotrophic hormone is known to affect neoplastic thyroid tissue. The influence of androgens on prostatic carcinoma and the relationship between oestrogen-induced tissue proliferation and neoplasia are also well known. It is concluded that the two processes overlap sufficiently to demand the closest scrutiny.—J. A. NICHOLSON.

HEIDELBERGER, M., GRAFF, S. & HAAGENSEN, C. D. (1952). **Quantitative immunochemical studies with the purified factor in mouse milk connected with mammary carcinoma.**—*J. exp. Med.* **95,** 333-340. [Authors' summary copied *verbatim.*] 3132

Antisera to the mouse milk factor (F), containing up to 0·5 mg. of antibody nitrogen per ml. are readily obtainable in rabbits, especially when adjuvants are added to the antigen. Quantitative data on the anti-F content of the sera are given, also on the total nitrogen precipitated by the non-casein fraction of C57 mouse milk which does not contain F. The antisera were also absorbed with casein fractions but the difficulties in the way of quantitative analysis were not overcome. Antisera to fractions of C57 mouse milk were also obtained and the reactions of F and the C57 proteins with these sera were studied. The results, as far as they go, are in accord with the earlier belief that the milk factor possesses an immunological specificity not present in normal mouse tissues.

SMITH, W. E., KIDD, J. G. & ROUS, P. (1952). **Experiments on the cause of the rabbit carcinomas derived from virus-induced papillomas. I. Propagation of several of the cancers in sucklings, with etiological tests.**—*J. exp. Med.* **95,** 299-318. [Authors' summary copied *verbatim.*] 3133

Three out of four carcinomas arising from virus-induced, rabbit papillomas have grown well after transplantation to sucklings. Two were propagated serially, and it seems likely that all could have been maintained indefinitely had litters been available of newborn animals of the sort in which they arose. These successes are the more worthy of note because of the well-nigh uniform failure of similar growths on transfer to adults. The tumors enlarged with great rapidity in the sucklings, were extraordinarily destructive, and two of them metastasized within a few weeks.

Many efforts were made to extract causative agents from the three carcinomas, on the assumption that these might be due to variants of the Shope virus. Highly favorable conditions for the demonstration of this latter were provided in the tests; yet their outcome was wholly negative although all of the cancers derived from papillomas caused by "recoverable" strains of virus, and although one of them appeared to be consequent upon only the slightest of alterations toward malignancy on the part of the papilloma from which it came. Extracts of another of the cancers, an anaplastic, squamous-cell carcinoma devoid of any morphological sign of the influence of the Shope virus, yielded typical virus papillomas on several occasions. The wholly negative results with the third cancer must be considered in the light of the fact that the "recoverable" strain of virus causing the papilloma from which it originated could no longer be recovered from such growths on collateral test.

BORGES, P. R. F. & DURAN-REYNALS, F. (1952). **On the induction of malignant tumors in pigeons by a chicken sarcoma virus after previous adaptation of the virus to ducks.**—*Cancer Res.* **12,** 55-58. [Authors' summary copied *verbatim.*] 3134

Filtrates from a variant of the Rous sarcoma, effective in both chickens and ducks, induced tumors in nine out of seventeen pigeons inoculated. Cell suspensions from the same variant induced tumors in all the twelve pigeons inoculated.

From the total of 21 tumors produced by either cells or filtrates, metastases were observed in only three cases, while regression occurred in eleven cases. The tumors could not be maintained by further cell passages in pigeons.

In all the ten pigeon tumors studied in this respect, the virus was found to be masked, as shown by the ineffectiveness of its filtrates in pigeons, chicks, and ducklings. The virus became unmasked in chicks and ducklings, as shown by the effectiveness of filtrates from the tumors induced in these hosts by cell suspensions of the pigeon tumors.

EMMEL, M. W. (1950). **The etiology of fowl paralysis, leukemia and allied conditions in animals. XIII. A study of the tumor-producing ability of "transmission agent EPL 16".**—*Tech. Bull. Fla. agric. Exp. Sta.* No. 470. pp. 24. 3135

The "transmission agent EPL 16" could be readily passaged in chickens 4–6 weeks old. It appeared to be closely associated with the nucleo-protein of the tumour cells.—D. LUKE.

Djaenoedin, R. & Koerjana, R. (1951). Mungkinkah ajam Indonesia ditulari penjakit neurolymphomatosis? **[Fowl paralysis in Indonesia.]** — *Hemera Zoa.* **58,** 679-687. [English, French and German summaries.] 3136

The authors described experimental infections with fowl paralysis by the intramuscular route in chickens, 1½–2 months old, using suspensions of brain, liver, spleen, kidney, blood and nerve tissue from two diseased fowls. Of 102 chicks injected with material from strain A (five months old with nerve lesions) 39 became infected. Of 50 chicks injected with material from strain B (1½ years old with paralysis and eye-lesions but without nerve lesions) 12 became infected.—C. A. van Dorssen.

## NUTRITIONAL AND METABOLIC DISORDERS

de Vuyst, A. (1952). Comportement physiologic d'un ruminant vis-à-vis d'une ration équilibrée réduite à l'état farineux. **[Digestion by a ruminant of a powdered ration.]**—*Ann. Méd. vét.* **96,** 4-11. 3137

Using an 18-month-old heifer and observing its reactions with regard to acceptance, rumination, general behaviour and weight gain and loss, to rations containing varying amounts of dry material, digestible protein and starch, the author demonstrated the importance of feeding nutrients in their coarse form for the normal function of the rumen and for regular increase in weight.—Charlotte M. Wood.

Buchanan, M. L., Lasley, E. & Bolin, D. W. (1949). **Anemia in suckling pigs.**—*Bi-m. Bull. N. Dak. agric. Exp. Sta.* **11,** 106-107. 3138

In 26 sows each fed a supplement of 0·5 oz. ferrous sulphate daily during pregnancy the haemoglobin level was increased as well as that in their offspring. The resulting piglets had higher birth weights, were more vigorous than the controls and the danger of the development of anaemia between birth and weaning was greatly reduced.—E.G.

Dick, A. T. (1952). **The effect of diet and of molybdenum on copper metabolism in sheep.** —*Aust. vet. J.* **28,** 30-33. 3139

Evidence is presented for the presence in lucerne chaff of a factor which modifies the control of liver-copper storage by molybdenum. On adjusted copper and molybdenum intakes of 15 mg. and 10·7 mg. per day respectively, sheep stored only small amounts of copper ($9 \pm 5$ mg.) in their liver over a six-month period and had comparatively low blood-molybdenum levels (48 μg. per 100 ml.) when fed entirely on lucerne chaff. When fed on a ration of oaten chaff, comparable values were $113 \pm 18$ mg. copper stored and 447 μg. molybdenum per 100 ml. blood. Intermediate rations containing 25–75% lucerne chaff gave intermediate values which depended on the lucerne chaff content in the ration. The results are discussed in relation to the findings of others and to the mechanism of copper uptake and storage by sheep.

—R. L. Reid.

Biavati, F. & Decastello, T. (1951). L'eliminazione dell'acqua e dei principi salini nell'alimentazione povera di sali. **[Elimination of water by rats on a salt-deficient diet.]** —*Arch. Vet. Ital.* **2,** 163-175. [English, French, German and Spanish summaries.] 3140

A salt-free diet fed to rats resulted in considerable water elimination, and tissues were less able to retain saline elements. Long survival was possible, perhaps by adaptation.

—F. R. Harris.

Biavati, F. (1951). Ricerche sul comportamento di alcuni organi di ratti sottoposti a dieta carenzata di sali. **[Effect on various organs of a diet deficient in salt.]**—*Arch. Vet. Ital.* **2,** 177-184. [English, French, German and Spanish summaries.] 3141

Kidneys and adrenal glands were morphologically changed in rats fed a salt-free diet, this being more marked when there was vitamin deficiency also. Other organs were almost unaffected.—F. R. Harris.

Dick, H. J. & Prior, J. T. (1951). **Experimental acute metastatic calcification in the kidney of rats. [Magnesium deficiency.]**—*Amer. J. clin. Path.* **21,** 409-422. 3142

In rats, magnesium deficiency constantly produced calcification without inflammation of the lower nephron, probably as a result of interference with bone growth. In some cases, chloride deficiency caused calcification at the cortico-medullary junction probably as a result of alkalosis but as two of the control rats later developed the same condition, inanition was not excluded. Potassium and linoleic acid deficiencies were not followed by kidney calcification.

—J. A. Nicholson.

BLAXTER, K. L. (1951). **The importance of fat soluble vitamins for calves.**—*J.R. agric. Soc.* **112**, 25-35. 3143

B. described the symptoms, pathological changes and practical considerations involved in deficiencies in calves of vitamins A, D, E. and K. Vitamin A is, by far, of greatest importance, as deficiencies of vitamins D, E and K rarely occur in the British Isles. B. deduced several general principles regarding the prevention of dietary deficiencies of fat-soluble vitamins.—D. MCALEESE.

MCGILLIVRAY, W. A. (1951). **The conversion of carotene to vitamin A in sheep and cattle.** —*Aust. J. sci. Res.* Ser. B. **4**, 370-376. [Authors' summary slightly modified.] 3144

Evidence is presented that the conversion of carotene to vitamin A in sheep occurs in the wall of the small intestine. This conclusion is based on surviving tissue experiments in which sections of intestine have been incubated with carotene and the product conclusively identified as vitamin A by colorimetric and spectrophotometric methods. It is further supported by the high vitamin A levels in intestinal as compared with non-intestinal lymph, and similar observations with cattle suggest the small intestine as the site of conversion in this species also.

PARRISH, D. B., AUBEL, C. E., HUGHES, J. S. & WHEAT, J. D. (1951). **Relative value of vitamin A and carotene for supplying the vitamin A requirements of swine during gestation and beginning lactation.**—*J. Anim. Sci.* **10**, 551-559. 3145

When equal numbers of units of vitamin A and of carotene were fed as supplements to pregnant gilts maintained upon a low carotenoid diet, the vitamin A of blood and colostrum of the gilt and of the liver and serum of the piglets was much lower in the animals receiving carotene than in those receiving vitamin A or a normal diet.—R. MARSHALL.

MORAUX, J. (1951). Observations sur le mécanisme d'action de quelques antivitamines K. (dicoumarol, phénylindanedione, diphtiocol). **[Mode of action of antivitamins K (dicoumarol, phenylindanedione, diphthiocol).]**—*C.R. Acad. Sci., Paris.* **233**, 711-713. 3146

The anti-vitamins K, phenylindanedione and diphthiocol, act in the same way as dicoumarol—but more feebly—on prothrombin and one other unknown factor.

—CHARLOTTE M. WOOD.

RUSOFF, L. L. & HAQ, M. O. (1951). **Effect of vitamin $B_{12}$ (A.P.F.) on the growth of calves weaned from milk at an early age.**—*J. Anim. Sci.* **10**, 331-334. 3147

The growth of calves weaned at 28 days on to an all plant protein diet was not affected by feeding or injecting vitamin $B_{12}$ supplements.—R. MARSHALL.

LECOQ, R., CHAUCHARD, P. & MAZONÉ, H. (1951) . Étude chronaximétrique des antagonismes pouvant exister entre hormones et vitamines et entre divers produits endocriniens. **[Chronaximetric study of antagonism between hormones and vitamins and between various endocrine products.]**—*C.R. Acad. Sci., Paris.* **233**, 830-832. 3148

Results from chronaximetric [a measurement of excitability of nervous or muscular tissue] studies indicated that the acid or alkaline nature of vitamins and hormones influenced the production of antagonistic or synergistic reactions between them.—CHARLOTTE M. WOOD.

SHAW, J. C., HATZIOLOS, B. C. & LEFFEL, E. C. (1951). **Studies on ketosis in dairy cattle. XIV. An approach to the etiology of ketosis in dairy cows.**—*Proc. 87th Ann. Meet. Amer. Vet. med. Ass.* Miami Beach, Aug. 21-24. 1950. pp. 73-75. 3149

Some of the metabolic changes observed in ketosis in cows can be compared with those occurring in the adaptation syndrome, and many glandular changes occur. Gastro-intestinal disturbance is secondary, the condition being hormonal. Fasting immediately *post partum* produces similar effects.—F. R. HARRIS.

PUNTRIANO, G. (1951). **Hormonal hypothesis of prepartum and postpartum acetonemia in dairy cattle.**—*Vet. Med.* **46**, 215-218, 301-304 & 333-338. 3150

Ketosis may arise from nutritional factors, parenchymatous dysfunction or hormonal imbalances; P. postulated several of the latter and their effects on the adrenal cortex, which he considers to be a key organ. Lines of investigation and treatment were suggested.

—JOHN SEAMER.

## DISEASES, GENERAL

DIESEL, A. M. & FOURIE, P. J. J. (1952). **The control of stock diseases in South Africa. (1652-1952).** — *Fmg. S. Afr.* **27**, 181-189. 3151

Close collaboration between field staff, research and educational institutes, municipal veterinary services, and veterinarians in private practice has played an important part in con-

trolling diseases of stock in South Africa. The authors gave an account of the diseases encountered by early settlers, and the measures that have been taken to deal with them.

—G. B. S. Heath.

Dalling, T. (1951). **Control of diseases of livestock: a comparison of methods in different countries and their significance.**—*Vet. Rec.* **63**, 763-766. 3152

A general account of the position regarding major diseases that occur in or might be introduced into Britain.—G. B. S. Heath.

Gannushkin, M. S. (1951). **[Influence of extraneous factors on the epidemiology of infectious diseases.]**—*Veterinariya, Moscow.* **28**, No. 3. pp. 7-11 3153

A general discussion.—F.A.A.

Kalapov, I. (1951). Information sur le développement de la peste aviaire, de la tuberculose et de la brucellose en Bulgarie. **[The control of Newcastle disease and of TB. and brucellosis in cattle in Bulgaria.]**—*Bull. Off. Internat. Épiz.* **35**, 492-494. 3154

Measures taken since 1946 to control Newcastle disease were described. Systematic detection and slaughter of infected poultry is now reducing incidence. The incidence of TB. in cattle is low, having decreased from 2% in 1946 to 0·4% in 1950. Measures include compulsory testing of herds following the disclosure of affected animals at abattoirs. Control of brucellosis in cattle is by slaughter of reactors and the use of Strain 19 vaccine on calves.

—G. V. Laugier.

Pfaff, G. (1950). **Epistaxis in racehorses. Incidence in South Africa.**—*J.S. Afr. vet. med. Ass.* **21**, 74-78. 3155

The incidence of epistaxis during racing, as occuring during a period of 24 months at five racing centres in S. Africa, was recorded. Analysis of incidence was made in relationship to (1) sex, (2) age, (3) length of races, (4) time of year, (5) altitude. The review covered 3,883 races in which a total of 4,015 horses ran, the average number of races run per horse being 19·5.—C. C. Bannatyne.

Gordon, W. A. M. & Luke, D. (1952). **Purpura in the pig.**—*Vet. Rec.* **64**, 113. 3156

The authors described a condition tentatively diagnosed as thrombocytopenic purpura in a litter of 12-week-old pigs. Ecchymoses of various sizes were present in the skin, mucosae and serosae, and four pigs had died before treatment was attempted. The remaining four, treated with a proprietary antihistaminic (mepyramine maleate) followed by adrenalin, made an uninterrupted recovery. [See also *V.B.* **22**, 1522.]—J. T. Done.

Lindsay, S., Chaikoff, I. L. & Gilmore, J. W. (1952). **Arteriosclerosis in the dog. I. Spontaneous lesions in the aorta and the coronary arteries.**—*Arch. Path.* **53**, 281-300. [Authors' summary copied *verbatim.*] 3157

The present report is based on a study of 26 dogs, 14 of which were 8 to 17 years of age.

The incidence of spontaneous arteriosclerosis of the aorta is high in dogs. The majority of the older dogs showed evidence of cardiac disease, including coronary arteriosclerosis and myocardial infarction or fibrosis.

The outstanding spontaneous lesion of canine arteriosclerosis is intimal fibrosis associated with deposition of a mucoid ground substance and collagen. Alteration of the internal elastic membrane may occur without intimal disease, and is almost invariably observed when intimal thickening is present.

Medial disease of the aorta was observed in the majority of dogs and was characterized by deposition of mucoid substances and collagen, often associated with focal proliferation of smooth muscle cells and focal alteration of elastic tissue.

Lipids appeared to play no part in the pathogenesis of the earliest intimal lesions. Although lipids were present in later lesions, lipid infiltration appeared to be a minor process even in the arteriosclerotic plaques of older dogs.

Cholesterol was not found in older lesions even where other lipids had infiltrated the intimal fibrous plaques.

Daniels, W. B. & MacMurray, F. G. (1951). **Cat-scratch disease. Nonbacterial regional lymphadenitis.**—*Arch. intern. med.* **88**, 736-751. [Authors' summary copied *verbatim.*] 3158

A series of 12 patients suffering from cat-scratch disease is described. The evidence indicates that the disease is ubiquitous and is frequently confused with more serious illnesses. It usually develops in persons who have had contact with cats, but a variety of other modes of infection exists. It is characterized by regional lymphadenitis, often suppurative, frequently preceded by an initial cutaneous lesion. A cervical form of the disease is common. The majority of patients have fever and systemic symptoms. The disease is indolent but self-limited, lasting from weeks to months. There is a specific diagnostic intradermal test. The

lymph nodes have a characteristic microscopic pattern which is suggestive but not diagnostic. The causative agent is unknown.

DAHL, L. K. & DOLE, V. P. (1952). **The biphasic nature of renal calcification.**—*J. exp. Med.* **95**, 341-346. [Authors' summary copied *verbatim*.] **3159**

Renal calcification, induced in rats by an injection of uranium, is accomplished in two stages: a primary accumulation of calcium in association with anions other than phosphate and a secondary conversion of this calcium complex into a precipitate of calcium phosphate. Except for the exclusion of chondroitin sulfate, the nature of the primary anions remains undefined. The accumulation of calcium in the kidney was converted into a precipitate of minimum solubility, and thus the evidence of its primary causation was obliterated. This may well hold true of calcification at other situations.

BARER, G. R. (1952). **A radiographic study of tissue permeability and lymph drainage in inflammation.**—*Brit. J. exp. Path.* **33**, 123-130. [Author's summary copied *verbatim*.] **3160**

The lymph drainage of inflammatory areas was studied by a radiographic method. Lymphatics appeared to be obstructed in fully-developed sterile abscesses, but not in local antigen-antibody reactions or mild burns.

By studying the spread of a radiopaque substance it was shown that the permeability of the skin alters at different stages of inflammation. In severe sterile inflammation spreading is inhibited, but is restored when hyaluronidase is injected into the area.

The significance of fixation and dispersion in local defence is discussed.

*See also abstr.* **3235** (report, Canada); **3244** (report, U.S.A.).

## POISONS AND POISONING

PRIOUZEAU, M. (1951). Purpura hémorragique des bovidés, consécutif à l'ingestion de sulfate d'ammoniaque. **[Poisoning of cattle with ammonium sulphate.]**—*Rec. Méd. vét.* **127**, 287-295. **3161**

Rabbits are sensitive to subcutaneous injections of ammonium sulphate, 500 mg. per kg. body weight being fatal, doses below this causing serious haemophilia. Similar results were obtained with cattle. Ingestion of the salt has a less toxic effect.—F. R. HARRIS.

KARNOFSKY, D. A. & RIDGEWAY, L. P. (1952). **Production of injury to the central nervous system of the chick embryo by lead salts.**—*J. Pharmacol.* **104**, 176-186. [Authors' summary copied *verbatim*.] **3162**

Lead nitrate, injected into the yolk sac, produces a severe and characteristic injury to the central nervous system of the chick embryo; this process begins with widespread hemorrhage in the brain and is followed by necrosis of the brain tissue and hydrocephalus. This response, not seen when lead is injected at the second day of incubation, first appears in embryos treated on the third to fourth days. A dose of 0.10 to 0.15 mgm./egg of lead nitrate is consistently neurotoxic during the fourth to tenth day, but in contrast to this uniform dosage, the embryo develops a progressive tolerance to lead, so that on the eighth to twelth days, it can survive 5 to 10 mgm. of lead, 50 to 100 times the lethal dose at four days. After the twelth day the brain becomes increasingly resistant to lead, although lead can still specifically damage the brain of the embryo at fifteen days.

The embryo continues to grow fairly well despite the lead-induced brain injury, and it shows normal yolk sac retraction at the time for hatching, although it ordinarily fails to hatch. Other organs of the embryo do not seem to be grossly affected by the minimum doses of lead damaging the brain, but when large doses are given there may be severe stunting and abnormalities in bone and feather growth. Thallium, which interferes with bone growth, and lead exert their specific and independent effects when given to the same embryo.

BOND, A. M. & MURRAY, M. M. (1952). **Kidney function and structure in chronic fluorosis.**—*Brit. J. exp. Path.* **33**, 168-176. [Authors' summary slightly modified.] **3163**

Rats given small amounts of NaF in the diet exhibited, in addition to the well-known skeletal and dental lesions, marked polydipsia and polyuria. The urine of these rats was of low specific gravity, but free from albumin and casts. There was slight glycosuria after 18 hours' fasting at blood-sugar levels of 70-80 mg. per 100 ml. Administration of glucose intraperitoneally produced definite glycosuria at blood-sugar levels less than 125 mg. per 100 ml. Thus there was a low kidney threshold. At autopsy the kidneys were dark, shrunken and nodulated. Demonstration of alkaline phosphatase showed that

there were fibrotic lesions in the cortex, where the enzyme was practically absent owing to absence of functional tubular tissue. The histological examination indicated that in the kidneys there was a vascular, glomerular and more obviously tubular degeneration leading finally to interstitial fibrosis. The fluoride-fed rats showed diminished growth, and at low body weights there was a marked diminution of fat stores. Nitrogen metabolism was greater in the fluoride-fed rats than in the controls.

WAGENER, K. (1952). Die Hyperkeratose, eine neue Rinderkrankheit von internationaler Bedeutung. **[Hyperkeratosis in cattle.]**—*Dtsch. tierärztl. Wschr* **59**, 1-5. 3164

Outbreaks of disease, from which 150 cattle died, were reported from 10 farms around Oldenburg in Germany. [See also *V.B.* **22**, 518 & 519]. The condition, of which the main symptom was hyperkeratosis, was traced to a poison contained in a wood preservative used in the stalls and sheds and on the floors. The chemical nature of the substance is not yet known but it is volatile and affects the animal through contact, feeding and inhalation. It was shown that a single coat of the poisonous substance on wood could affect animals in the stable for at least two years.—CHARLOTTE M. WOOD.

TROTTER, W. R. (1952). **A comparison of the acute toxic effects of iodides and thiourea derivatives.**—*Brit. J. exp. Path.* **33**, 202-206. [Author's summary copied *verbatim*.] 3165

Single large injections of sodium iodide cause pulmonary oedema and pleural effusions in the rat. The changes in the lungs and pleura are very similar to those which follow administration of many thiourea derivatives.

Allyl thiourea, which is known to protect against otherwise lethal doses of the more toxic thiourea derivatives, has been shown to protect also against large doses of sodium iodide.

It appears probable that the mechanism by which thiourea derivatives and sodium iodide produce their effects on lungs and pleura is similar or identical. In neither case does the presence of the thyroid seem to be essential.

HOLM, L. W., JOHNSON, L. F. & CRITCHLOW, J. K. (1952). **Experimental poisoning of cattle and sheep with dynamite.**—*Cornell Vet.* **42**, 91-96. [Authors' summary slightly modified.] 3166

As determined on a limited number of animals, the minimum lethal dose of commercial dynamite for cattle and sheep *per os* is 0·85–1·0 g. per kg. In terms of dynamite sticks, this is one stick per 420 lb. of body weight.

WEAVER, N. (1951). **Toxicity of organic insecticides to honey bees: contact spray and field tests.**—*J. econ. Ent.* **44**, 393-397. 3167

M.L.D. of insecticides sprayed on to bees in cages corresponded to the following dressings per acre:- γ-benzene hexachloride 0·02 lb: γ-benzene hexachloride–D.D.T. mixture (3:5) 0·015 lb; chlordane 0·038 lb; D.D.T. 0·089 lb; toxaphene [a chlorinated camphene] 0·224 lb. Sprays were more toxic than dusts under the test conditions. In field tests, caged bees worked cotton which had been treated with the same insecticides. There was 8-10% mortality in eight applications of a spray, *e.g.* containing 2 parts toxaphene—1 part D.D.T., and dusts of 20% toxaphene, 10% D.D.T., 3% γ-benzene hexachloride, 3% γ-benzene hexachloride—5% D.D.T., and 10% chlordane.—K. J. SINCLAIR.

CORDY, D. R. (1952). **The pathology of experimental bracken poisoning in rats.**—*Cornell Vet.* **42**, 108-117. [Author's summary copied *verbatim*.] 3168

Rats on a ration containing raw bracken fern showed thrombocytopenia, some leucopenia, and a marked bone marrow hypoplasia. Such rats also showed a progressive weight loss. Thiamine therapy promptly corrected these changes. Rats fed an autoclaved [bracken] fern ration gained poorly, but showed none of the hematologic abnormalities. Atrophic skin changes occurred in both groups and did not appear to be specifically benefited by thiamine.

SMITH, W. S. (1951). **Soursob poisoning of sheep.**—*J. Dep. Agric. S. Aust.* **54**, 377-378. 3169

Oxalic acid poisoning in sheep following the ingestion of soursob (*Oxalis cernua*) is common in certain areas of South Australia. S. classified the symptoms as acute, sub-acute or chronic, depending on the nutritional state of the sheep and the extent of grazing on the plant. He referred to prevention of the poisoning.
—R. L. REID.

GARDNER, C. A. & BENNETTS, H. W. (1952). **Poison plants of Western Australia. Toxic plants of the genus *Isotropis*, including the so-called "lamb poison".**—*J. Dep. Agric. W. Aust.* [N.S.] **1**, 219-226. 3170

The authors described six species of the genus *Isotropis*, which is restricted to Australia. Three of these species are known to be toxic to both cattle and sheep, and the poisonous principle is thought to be an alkaloid. Field evidence suggests that the ingestion of a large amount of the plant may cause sudden death in several hours without definite symptoms.

Symptoms commonly noted are dulness, standing with roached back, loss of appetite, persistent diarrhoea, blood and mucus being voided within a day or two; weakness becomes progressive and death occurrs within 2–7 days. Congestion of the liver, pale kidneys, severe inflammation of the abomasum and intestines with extensive haemorrhage and ulceration of the large intestine are usually noted on P.M. examination. Marked kidney damage is seen microscopically. —B. A. Forsyth.

West, E. & Emmel, M. W. (1950). **Some poisonous plants in Florida.**—*Bull. Fla. agric. Exp. Sta.* No. 468. pp. 47. 3171

An illustrated description of poisonous plants of Florida including an account of their distribution and toxicity and of the symptoms, prevention and treatment of poisoning. Conditions under which poisonous plants are eaten were discussed. Mention was made also of *Indigofera hirsuta* (hairy indigo), as a cause of mechanical injury.—D. McAleese.

*See also absts.* **3236** (report, Australia); **3241** (report, Fiji); **3242** (report, Republic of Ireland).

## PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease)

Francis, J. (1952). **The sulphonamides: relative potencies and specificity of action.**—*Brit. J. Pharmacol.* **7**, 189-195. [Author's summary modified.] 3172

The relative potencies of the common sulphonamides and 4:4'diaminodiphenyl sulphone (sulphone) were compared *in vitro* against a number of pathogens.

In the most satisfactory series of experiments the average sulphanilamide coefficient of the heterocyclic sulphonamides was only 2·3 against streptococci but 139 against *S. cholerae suis* and 36 against *Bact. coli.*

Sulphone was more active than any of the sulphonamides, except sometimes sulphathiazole, against streptococci, but it was less active than the heterocyclic sulphonamides against Gram-negative organisms.

The significance of these findings was discussed.

Aries, L. (1951). Zur Therapie mit Lachesis. [**Lachesis (snake venom) therapy.**]—*Mh. Vet.-med.* **6**, 440-443. 3173

Peroral, subcutaneous or intramuscular administration of "lachesis" (a snake venom) may result in dramatic cures in mastitis, puerperal fever, incipient pneumonia, sclerosis, septic cholecystitis, rheumatism and thrombophlebitis in animals and human beings.—F. R. Harris.

Van Cauwenberge, H. & Betz, H. (1952). **Salicylates and neuro-endocrine stimulation.**—*Lancet.* **262**, 1083-1086. [Authors' conclusions copied *verbatim.*] 3174

Signs of adrenal activity are produced by a dose of sodium salicylate smaller than that which produces the high blood-salicylate level regarded by Coburn (1943) as necessary for the treatment of acute rheumatism. Low blood-salicylate levels (6 or 7 mg. per 100 ml.) cause nuclear pyknosis in the lymphoid tissue of rats. Injection of sodium salicylate reveals a gradient among the responses generally regarded as evidence of adrenal stimulation. The response to injection of sodium salicylate is smaller in rats anaesthetised with dial. Inhibition of the pituitary-adrenal mechanism by barbiturates may be important in the treatment of certain endocrine disorders. In the treatment of rheumatic disease it seems inadvisable to administer salicylates and large doses of barbiturates together.

Bruce, H. M., Parkes, A. S. & Perry, W. L. M. (1952). **Assay of A.C.T.H. on the thymus of the nestling rat.**—*Lancet.* **262**, 790-793. [Authors' summary copied *verbatim.*] 3175

The decrease in weight of the thymus of the intact nestling rat caused by administration of A.C.T.H. has been used as the basis of an assay method.

Neither the mild stresses caused by the performance of the test nor other relevant hormones (except cortisone) cause any demonstrable change in thymus weight under similar conditions. The test is therefore regarded as adequately specific in spite of the use of intact animals.

Variables associated with the test are considered. Full details of the procedure chosen are given in the appendix.

It seems likely that the method provides a comparatively simple quantitative assay of A.C.T.H.

The main disadvantage of the test is lack of sensitivity, making comparatively large amounts of active material necessary.

Buckley, J. L. & Bergstrom, W. H. (1951). **Paraldehyde as an aid to handling mammals.**—*J. Wildl. Mng.* **15**, 112-113. 3176

Intramuscular injection of paraldehyde in a suitable dosage rendered wild mammals (chiefly beaver) capable of easy handling after about five minutes.—R. Marshall.

MACKAY, I. (1952). **Hexylresorcinol as an aerial disinfectant.**—*J. Hyg., Camb.* **50,** 82-96. [Author's summary copied *verbatim.*] 3177

Experiments were carried out in a test chamber of 16,500 cu. ft. capacity with air conditioned at 68° F. and 54% relative humidity. Ventilation was controlled at 3·0 changes/hr., air being recirculated with 0·5 change/hr. of fresh air admitted. By spraying into the air ducting a concentrated suspension of *Chr. prodigiosum* a bacterial cloud was introduced into the chamber of over $5 \times 10^6$ organisms/cu. ft. of air as 1$\mu$ particles. Viable organisms were still present in the atmosphere after 6 hr.

When a heat-generated vapour of hexylresorcinol was introduced in a concentration of between 6 and 7 $\mu$g./cu.ft. of air the bacterial count dropped from nearly one million organisms per cu.ft. to fewer than ten in 35 min.

When the bacterial suspension was sprayed into the chamber with hexylresorcinol vapour present, the peak concentration reached was about one-quarter and on stopping the spray, the bacterial count fell from one million per cu. ft. to fewer than ten in less than 25 min.

Hexylresorcinol is also effective when the bacterial aerosol is in particles of 6–7$\mu$ in size (approx. 100 bacteria per particle).

Hexylresorcinol has no effect against a bacterial aerosol of *B. subtilis* spores in 1$\mu$ particles.

No attempt has been made to analyse the mode of action of hexylresorcinol in diminishing the bacterial content of the air. The evidence collected clearly indicates the necessity for further study of this problem.

LOWBURY, E. J. L. & HOOD, A. M. (1952). **A disinfectant barrier in dressings applied to burns.**—*Lancet.* **262,** 899-901. [Authors' summary copied *verbatim.*] 3178

Cultures of *Ps. pyocyanea, Pr. vulgaris, Bact. aerogenes, Staph. aureus,* and *Strep. pyogenes* would not "grow through" model dressings soaked with sterile serum-broth when the cotton-wool was medicated with phenyl-mercuric bromide. The disinfectant was precipitated on to cotton-wool by addition of potassium bromide to a solution of phenyl-mercuric acetate in acetic acid, or occasionally by evaporation from an alcoholic solution of the compound.

Dry treated dressings dipped in serum-broth cultures did not prevent the passage of organisms, but the surface of the dressing became sterile in periods varying from one to six hours or within twenty-four hours.

The treatment of cotton-wool with octyl cresol and other phenyl-mercuric salts and the treatment of crêpe bandage with phenyl-mercuric bromide did not provide a reliable disinfectant barrier.

It is suggested that the infection of burns, which may occur when dressings become soaked through with exudate, might be prevented if a layer of treated cotton-wool is applied under the bandage.

*See also absts.* **3036** (cortisone in enterococcal disease); **3040-3041 (TB.); 3043** (cortisone in *Corynebact. murium* infection); **3044** (penicillin in *E. rhusiopathiae* infection of turkeys); **3049-3050** (glanders); **3061** (caecal coccidiosis); **3077** (analysis of F. & M. disease vaccine); **3119** (acaricidal properties of chlorinated insecticides); **3120** (phenothiazine and liver fluke); **3130** (effects of radiation on tumours); **3151-3152** (control of livestock diseases); **3165** (toxic effects of iodides and thiourea); **3196** (preservation and dilution of semen); **3207** (effect of cortisone on testes); **3244** (report, U.S.A.).

## PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

FINDLAY, J. D. (1950). **The effects of temperature, humidity, air movement and solar radiation on the behaviour and physiology of cattle and other farm animals. A review of existing knowledge.**—*Bull. Hannah Dairy Inst.* No. 9. pp. 178. 3179

A detailed review of existing knowledge on the effect of climate on the behaviour and physiological reactions of animals. The first eight chapters deal with the effect of tropical environment on body temperature, respiration, heart rate, blood, milk and grazing habits of cattle and other animals. The next five chapters discuss techniques used in the measurement of the body functions and a psychrometric room installed at the Hannah Institute is described. Suggestions for future investigations are made.

—E. J. H. FORD.

BIANCA, W. (1951). Der Einfluss der Alpung auf das Blutvolumen von Jungziegen. **[Effect of high altitude on the blood volume of goats.]**—*Schweiz. Arch. Tierheilk.* **93,** 468-499. [English, French and Italian summaries.] 3180

The transfer of animals to alpine pastures during the summer involves a considerable change of altitude. These experiments demonstrated an increase in blood volume after the ascent.—ROY MACK.

BARADI, A. F. & BOURNE, G. H. (1951). **Localization of gustatory and olfactory enzymes in the rabbit, and the problems of taste and smell.**—*Nature, Lond.* **168,** 977-979. 3181

The hypothesis, based on experimental studies of enzymes located in six main sites,

that substances inhibit or accelerate the activity of these enzymes and thus affect the pattern of nerve impulses reaching the brain, is put forward as explaining the mechanism of taste and smell.
—Charlotte M. Wood.

Chanda, R. & Owen, E. C. (1952). **The effect of thyroxine and thiouracil on the composition of milk. II. The carotene and vitamin A content.**—*Biochem. J.* **51,** 404-417. [Authors' summary modified.] 3182

The metabolism of carotene in six lactating cows and in eight lactating goats was investigated with the following results: Goats milk contained 142 i.u. vitamin A/100 ml., all of it in the ester form. Cow's milk contained 88 i.u. vitaminA, 6% of which was in the alcohol form. Unlike the cow's milk, that of goats did not contain carotenoids, but β-carotene was demonstrated in the colostrum and in the liver of goats.

When the cows were deprived of carotene for a fortnight their milk yields were not affected, but the concentrations of vitamin A and carotene decreased. At the same time the proportion of vitamin A present in the alcohol form increased. Superimposing thyroxin treatment upon carotene deprivation caused even greater increases of vitamin A alcohol in the milk.

On re-instatement of the carotene-containing diet the concentrations of both carotene and vitamin A increased at rates which were enhanced by thyroxin and diminished by thiouracil. The effects on vitamin A and carotene of discontinuing thyroxin while the cows were still ingesting carotene were similar to those produced by injecting thiouracil. Conversely, the effects of discontinuing thiouracil were similar to those of giving thyroxin.

Thyroxin and thiouracil produced changes in the composition of goat's milk which were similar to those found in cow's milk.

Ramsay, W. N. M. (1952). **Iron metabolism and haemoglobin formation in the embryonated hen egg. III. Iron in the liver and blood of the hatching chick.**—*Biochem. J.* **51,** 289-291. [Abst. from author's summary.] 3183

The total iron content of the blood in 13 newly hatched chicks was 35·5 (S.D. 2·0) mg. per 100 ml. The livers of 21 newly hatched chicks contained on 45·4 (S.D. 12·5) μg. total iron and 22·7 (S.D. 5·9) μg. non-haem iron.

Drago, G. R. (1951). El calcio y fósforo inorganico del suero en vacas normales. **[Calcium and phosphorus contents of serum of healthy cattle.]**—*Rev. Fac. Med. Vet., Lima.* **5,** 61-71. [English summary.] 3184

Calcium and inorganic phosphorus were determined in the blood serum of 100 healthy Holstein dairy cows, 50 from each of two leading dairy farms in Lima. The cows were on rations providing ample supplies of Ca and P. Data of Ca and P contents tabulated, and compared with data reported in the literature, indicated the wide variation that exists between individual healthy animals. Statistical analysis revealed no significant difference between Ca and P levels in high and low yielding cows, nor any difference attributable to the difference in locality of the farms.—K. J. Sinclair.

Rimington, C. (1951). **Pigments of blood and bile**—*Lancet.* **261,** 551-556. 3185

Accurate *in vitro* experiments have produced a plausible hypothesis of the synthesis of bilirubin. The use of radio-active or otherwise labelled elements is revealing the steps in the synthesis of porphyrin, and will necessitate drastic revision of accepted ideas of erythrogenesis and of pigment metabolism.
—W. R. Bett.

Norton, S. & Wolfe, H. R. (1949). **The growth of the spleen in the chicken.**—*Anat. Rec.* **105,** 83-93. 3186

The spleens of fowls were found to be more variable than the body weight as expressed in standard error and coefficient of variation. When corrected for the heavier body weight of males the spleens of females were significantly heavier than those of males. The maximum size of the spleen was attained at 3–4 months of age.

It was suggested that it may be necessary for the spleen to reach a certain stage of growth before it becomes "serologically mature".

Gordon, A. H., Gross, J., O'Connor, D. & Pitt-Rivers, R. (1952). **Nature of the circulating thyroid hormone-plasma protein complex.**—*Nature, Lond.* **169,** 19-20. 3187

Chromatographic studies with radio-active iodine indicate that serum thyroxin is closely associated with α globulin.—John Seamer.

Whittlestone, W. G. (1952). **The milk-ejecting activity of extracts of the posterior pituitary gland.**—*J. Endocrinol.* **8,** 89-95. [Author's summary copied *verbatim.*] 3188

The lactating sow milked mechanically has been used for the study of the hormones of the posterior pituitary gland. The van Dyke protein and du Vigneaud's high potency posterior lobe oxytocic polypeptide have been shown to possess milk-ejecting activity equivalent to their oxytocic activity. Commercial pressor preparations and du Vigneaud's highly purified basopressin have milk-ejecting activity corresponding to a

given pressor activity which is equivalent to one-fifth of the same number of oxytocic units.

MEARA, M. L. (1952). **The component acids of the milk fat of a grey Atlantic seal.**—*Biochem. J.* **51**, 190-193. [Author's summary modified.] **3189**

Grey (Atlantic) seal (*Halichoerus grypus*) milk resembles whale milk in that its fat content is of the order of ten times that found in the milk of various land animals. The composition of seal milk fat has been investigated; it contains only those acids which occur in its blubber fat. Qualitatively grey seal milk fat resembles that of the blubber oil of the same and of a number of other species, notable differences, however, occurring in the proportions of palmitic and unsaturated acids.

Grey seal milk fat is relatively more saturated than that of the blubber oil in contradistinction to that of the blue whale, for which the reverse holds true.

*See also absts.* **3083-3086** (studies of influenza viruses); **3108** (axis cylinder and viruses); **3109** (viruses and cells); **3159** (biphasic nature of renal calcification); **3163** (kidneys and chronic fluorosis); **3195** (hyaluronidase of semen); **3208** (olfactory sensitivity in rats); **3211** (anatomy of ovary etc. in camels); **3212** (penetration of the sperm).

## PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

OLSEN, E. M. (1951). **Coliform bacteria in milk.**—*Nord. Vet.-Med.* **3**, 984-1002. [In English. German and Danish summaries. Abst. from English summary.] **3190**

The presence of coliform bacteria in heat-treated milk indicates either insufficient heating, dilution with raw milk or contamination after heating.—R. MARSHALL.

SZUMOWSKI, P. (1951). Contribution à l'étude du passage dans le lait d'oestrogènes synthétiques implantés sous la peau de génisses. **[The excretion of oestrogen in milk from heifers which had received implantations of stilboestrol.]**—*Rec. Méd. vét.* **127**, 84-91. **3191**

Normal and ovariectomized rats were fed for three months on milk from a heifer implanted with 250 mg. stilboestrol. An increase in uterine weight and histological changes in the cornua of the female rats was taken to indicate that the oestrogen was excreted in the milk. No reaction was seen in the male rats.

—J. A. NICHOLSON.

FLÜCKIGER, G. & WALDKIRCH, E. (1950). Eidgenössische Tierseuchengesetzgebung Kommentar zum Bundesgesetz betreffend die Bekämpfung von Tierseuchen und zur Vollziehungsverordnung zu diesem Gesetz. **[Commentary on the Swiss law of 1917 concerning the control of epizootics.]** pp. 224. Berne: Hans Huber. 4th Edit. Sw. fr. 12.80. **3192**

This is a detailed commentary on the Federal law of 1917 concerning the control of epidemic diseases of livestock. The subject matter is divided into six sections and an appendix and deals with regulations regarding the organization of local and federal veterinary police duties; transport of live animals and products of animal origin; measures against the spreading of epidemics of livestock; compensation and distribution of costs of control; penalties, and local and temporary regulations.

An appendix deals among other matters with regulations regarding sale under warranty, the production, sale, importation, distribution and testing of veterinary vaccines and sera and special regulations concerning outbreaks of specific epidemic diseases. There are also specimens of official Swiss forms used in connexion with transport of animals and samples of posters for use in connexion with the imposition of quarantine in outbreaks of foot and mouth disease.—E.G.

*See also absts.* **3078** (rabies in Hong Kong); **3103-3104-3105** (Q fever); **3124** (*Ascaris* ova on sewage farms); **3192** (Swiss law on epizootics); **3243** (report, Sweden).

## LIVESTOCK HYGIENE

*See also absts.* **3164** (hyperkeratosis in cattle); **3192** (Swiss law on epizootics); **3230** (nutrition of experimental animals).

## REPRODUCTION AND REPRODUCTIVE DISORDERS

WICHART, D. S. (1951). **The uses and limitations of artificial insemination in dairy cattle. With special reference to Australian conditions.**—*J. Aust. Inst. agric. Sci.* **17**, 184-188. **3193**

W. outlined the technique of insemination and the organization of an insemination service. The prospects for the use of artificial insemination in Australian commercial herds are limited, owing to the expense and the shortage of proven sires. In stud herds it could be used to advantage to increase the number of sons of proven sires.—C. S. SAPSFORD.

HENDRIKSE, J. & JOLING, K. F. (1952). Mededelingen omtrent de K.I. in de provincie Utrecht. **[Artificial insemination in the Utrecht Province.]**—*Tijdschr. Diergeneesk.* **77,** 79-105. 3194

A description of the development of artificial insemination in the Utrecht Province since 1946. Part of the insemination is performed by veterinary students.—C. A. VAN DORSSEN.

JAQUET, J., PLESSIS, Y. & CASSOU, R. (1951). Hyaluronidase du sperme et fécondité des taureaux. **[Hyaluronidase of semen and fertility in bulls.]**—*C. R. Acad. Sci., Paris.* **232,** 1252-1254. 3195

It was established that the enzyme content remained relatively constant over several collections from a given bull; also that there was a relationship between the sperm density and enzyme level, but this latter remained relatively constant after the death of the cells, in contrast to the semen pH, linked as this is to the metabolic activity. Examples only, not full statistical details, were given. The actual fertility of nine A.I. bulls, calculated on first inseminations only, had a close correlation with the diffusion-factor level, which varied little for each bull throughout 1950. The authors suggest that this measurement may become a valuable index to the usefulness of a bull if additional results confirm the present conclusions.—F. L. M. DAWSON.

LAPLAUD, M., BRUNEEL, R. & GALLAUD, H. (1951). Conservation et dilution du sperme de cheval et de baudet. Nouveau dilueur à base de lait. **[Preservation and dilution of horse and donkey semen. A new diluent with a milk base.]**—*C. R. Acad. Sci., Paris.* **233,** 762-765. 3196

Condensed, unsweetened cow's milk diluted (1:1) with Milovanov solution will preserve active horse and donkey semen for at least four days. Sulphanilamide may be added.

—S. E. FOX.

BRIÈRE, J. (1950). Contribution à l'étude des méthodes de collecte du sperme chez le taureau. **[Methods for collection of semen from bulls.]**—*Thesis, Alfort.* pp. 43. 3197

Teaser cows are adequately immolilized without the use of stocks by passing chains from the nose ring round the elbows so as to fix the head in a lowered position. B. finds a constant locality and operator, but constantly changed teasers, most conducive to maintaining the keenness of bulls. During one month three Norman bulls averaged 7 ml. per ejaculate with a mean density of 900,000 per cu. mm. Collection by vesicular massage is best practised in the presence of a cow in oestrus. The method is considered to have been outmoded by the introduction of electro-ejaculation methods. The electro-ejaculation method of Laplaud and Casson 1945 had the disadvantages of causing apparently intense pain to the animals and of yielding samples heavily diluted by accessory secretions, but these were eliminated in that of Laplaud, Thibault, and Ortavant 1948 which used a modified electrode by which the stimuli could be varied to produce first almost pure accessory secretions and then almost pure spermatozoa. It has yet to be shown, however, whether the method could be used continuously on a given animal over a prolonged period. Briere's own method is that of inserting a modified artificial vagina into the passage of a teaser cow so that the bull is less likely to suspect deception. He considers that Norman bulls are particularly shy of the ordinary a.v. A big-framed multiparous cow is essential. Under epidural anaesthesia, 10 ml. of 2% solution in the first intercoccygeal space, the tail is tied up to the cow's horns and its root bandaged. Briere has now come to prefer the method even with bulls that will use the a.v., having the impression that it yields a superior quality sample.

Conception rates have been in the region of 70% and keeping quality appears equivalent to that of ordinary samples. Four bulls that refused the ordinary a.v. have been successfully kept at work by this method. B. considers "that it is the contact with the vulval mucosa of the cow that gives the bull confidence to make a good jump".

The modified a.v. is without bung, but with a steel ring at the proximal end. It uses the standard liner, cone, and collecting tube.

—F. L. M. DAWSON.

BOSSELAAR, C. A. & SPRONK, N. (1952). **A physical method for determination of the motility and concentration of spermatozoa.** —*Nature, Lond.* **169,** 18-19. 3198

This is a preliminary report of a photo-electrical method of measuring sperm motility. With the aid of a microscope an image of the sperms is thrown on to a screen having an aperture of the same size as the image of a single sperm. Behind the aperture is a photomultiplier which produces a voltage pulse when the image of a moving sperm crosses the aperture. These voltage pulses are counted on an electronic counter based on the "scale of two" principle. Thus with a known semen concentration the number of pulses in a given time is a measure of sperm motility. If a large screen aperture

and low magnifications are used then the light scattered by a large number of sperms falls on to the photomultiplier and the output voltage of the amplifier is a measure of semen concentration.—E. J. H. Ford.

Albornoz, A. & Ramos, L. G. (1951). La electroeyaculación en carneros. [**Obtaining semen from rams by electrical stimulation.**]—*Rev. Med vet., Chile.* **1,** No. 1. pp. 16-25. 3199

The authors reported the effect of variations in voltage, number of stimuli, and position of electrodes on the quality of semen produced by electrical stimulation.—I. W. Jennings.

Maqsood, M. (1951). **Influence of thyroid status on spermatogenesis.**—*Science.* **114,** 693-694. 3200

Administration of thyroxin to both male rabbits and rams resulted in increased spermatogenesis whilst the administration of thiouracil caused degenerative changes in both tubular and interstitial cells.—E. J. H. Ford.

Polge, C. & Rowson, L. E. A. (1952). **Fertilizing capacity of bull spermatozoa after freezing at −79°C.** [Correspondence.]—*Nature, Lond.* **169,** 626-627. 3201

Earlier work had shown that mammalian spermatozoa in 15% glycerol frozen rapidly to −79°C. did not retain their fertilizing powers. In the present trials the semen was equilibrated overnight with the glycerol diluent at 50°C., and then cooled slowly for 45 min. to −79°C. Samples were stored for periods ranging from two hours to eight days and used to inseminate 38 cows. A pregnancy rate of 79% was obtained. The implications of the work were discussed.—E. J. H. Ford.

Morales, C. C. & Damonte, F. R. (1949). La reacción de Friedmann en equinos. (Utilisando suero sanguíneo). [**The Friedmann reaction for pregnancy diagnosis in mares.**]—*Rev. Fac. Agron. Vet., B. Aires.* **12,** 221-252. [English summary.] 3202

A review of the theory and application of the Friedmann reaction, with tabulated results obtained with 184 pedigree and cross-bred mares.

In practice blood serum is adopted for the Friedmann test on mares. Out of 157 tests, controlled by parturition records, 156 were positive. This high percentage of success is in line with results obtained in human pregnancies. The test is reliable from the 43rd day of pregnancy and has given positive results up to the 180th day.

Exploratory laparotomy is advisable on the experimental rabbit to avoid failure due to defective, immature or diseased ovaries.

—K. J. Sinclair.

Guimarães, L. M. & Neto, J. F. T. (1950). A prova da ovulação da coelha no diagnóstico da prenhez da égua puro sangue inglês. (Dados obtidos em quatro estações de monta —1945-1946 a 1948-1949.) [**Diagnosis of pregnancy in Thoroughbred mares by the rabbit ovulation test. (Report of experiments carried out during four breeding seasons—1945-46 to 1948-49.)**]—*Rev. Fac. Med. vet., S. Paulo.* **4,** 339-356. [English summary.] 3203

Pregnancy diagnosis was carried out for 77 mares and 233 tests were performed. Clear results were obtained from 185 tests, 127 being positive and 58 negative. Fifteen of the positive and one of the negative results were proved to be wrong.—J. Edwards.

Boguth, W. (1951). Über eine Modifikation der Cuboni-Reaktion zur Schwangerschaftsdiagnose bei der Stute. [**Modified Cuboni test for pregnancy diagnosis in mares.**]—*Mh. prakt. Tierheilk.* **3,** 168-177. 3204

In order to overcome the difficulty of interpreting the fluorescence seen in the Cuboni test, the benzene extract after acidification with sulphuric acid is examined by incident light with a wavelength of 500 mμ. B. described a suitable apparatus for the purpose and a rapid method for urine extraction.—J. A. Nicholson.

Alexander, G. & Rossiter, R. C. (1952). **The effects of fertilizer treatments on the oestrogenic potency of** *Trifolium subterraneum L.* —*Aust. J. agric. Res.* **3,** 24-28. 3205

The oestrogenic potency of subterranean clover from unfertilized plots was found to be significantly higher than that from plots treated with superphosphate. The potency of the clover from plots which received superphosphate together with other fertilizers and trace elements was not significantly different from that of clover from the plot treated with superphosphate alone. Two different strains of clover grown in entirely different locations were used in the experiments and gave similar results. The potency was measured by uterine weight increase in spayed g. pigs.—A. W. H. Braden.

Marshall, A. J. & Coombs, C. J. F. (1952). **Lipoid changes in the gonads of wild birds: their possible bearing on hormone production, sexual display and the breeding season.**—*Nature, Lond.* **169,** 261-264. 3206

From detailed observations on the lipoid changes in the gonads of wild birds, the authors

incline towards an internal rhythm theory of their breeding habits and cycles.

—Charlotte M. Wood.

Leroy, P. (1951). Effets de la cortisone sur le testicule des mammifères et des oiseaux. [**Effect of cortisone on mammalian and avian testes.**]—*C. R. Acad. Sci., Paris.* **233,** 976-978. 3207

Cortisone exerts a favourable action upon the development of immature fowls and adult rats and hamsters, whether intact, adrenalectomized or hypophysectomized. There is no androgenic effect upon the capon comb.

—F. R. Harris.

Le Magnen, J. (1951). Étude des phénomènes olfacto-sexuels chez le rat blanc. Variation de sensibilité olfactive absolue du mâle et de la femelle en fonction de leur état hormonal sexuel. [**Variation in olfactory sensitivity in male and female rats in different stages of sexual activity.**]—*C. R. Soc. Biol., Paris.* **145,** 1636-1641. 3208

A specific difference in the olfactory sensitivity of male and female rats to three artificial odours was demonstrated. Sensitivity varied according to the sexual state (immature, normal or castrated), and to the action of hormones. This supports the theory that the olfactory receptor system is a sexual receptor.

—Roy Mack.

Diernhofer, K. (1951). La stérilité des bovidés d'origine microbienne. [**Infectious forms of sterility in cattle.**[—*Bull. Off. internat. Epiz.* **36,** 386-399. [English summary.] 3209

During and after the second world war the official agricultural organizations in Austria instituted communal service centres, keeping better bulls, without consulting the veterinary profession, whose members were then largely absent in the army, about the risk of disease dissemination. Results were "catastrophic", and led to a federal law passed in 1948 against "bovine venereal disease" and enforced throughout Austria. This law included those outbreaks where the cause remained undiagnosed, action being taken whenever a (compulsory?) herd examination for pregnancy *per rectum* indicated a bad conception rate. The law provides that any cattle then found pregnant may only be served at the third heat after calving, and not before a year has elapsed since the service producing the pregnancy. Any other served cattle are deemed "infected", and must be treated, usually with a single Lugol or chloramine irrigation, and then rested from breeding until the fourth subsequent heat. In general no animal may be moved off an infected farm until six months have elapsed since the herd pregnancy test upon which diagnosis was based. Exception is however made in favour of freshly-calved cows and those more than six months pregnant. D. admits that some herds may come to be submitted to the rigours of this law solely on account of a functionally infertile bull. But in his experience the herd examination usually reveals enough individual abnormality in the cows to justify treating a certain proportion. The result of applying this law has been generally excellent, especially in conjunction with artificial insemination, which began in 1946 and for which there are now 29 centres with about 120 bulls. It is not specifically stated whether the law provides for compulsory seizure of infected bulls. D. has successfully conducted propaganda campaigns to encourage the slaughter of such animals.—F. L. M. Dawson.

Webster, W. M. (1951). **Infertility in rams.**—*Proc. 11th Ann. Conf. N.Z. Soc. anim. Prod.* **2,** 62-78. 3210

Many flock rams are grossly inefficient or even completely sterile, and alteration of husbandry methods will, in many cases, greatly improve the conception rate. W. believes that the period of flushing (the time during which the ram receives extra feeding and becomes sexually active) is particularly important. Premature flushing should be avoided, but rams must not be out of condition at the beginning of the mating season. Also, they should not be moved to a new environment while they are being flushed. Scrotal ventilation is most important and all flock rams should have the wool around the scrotum clipped just before the mating season commences.—G. B. S. Heath.

Tayeb, M. A. F. (1950). Étude sur l'anatomie de l'ovaire et du corps jaune de la chamelle. [**Anatomy of the ovary and corpus luteum of the camel.**]—*Rev. Élev. Méd. vét. Pays trop.* **4,** 177-182. 3211

Ovaries of 150 camels were examined macroscopically and histologically, including impressions of the forming and regressing follicle. Of the other domestic animals they most closely resemble those of the sow in general structure.—R. N. Smith.

Austin, C. R. (1951). **Observations on the penetration of the sperm into the mammalian egg.**—*Aust. J. sci. Res. Series B.* **4,** 581-596. 3212

The author observed that penetration of the ovum of the rat by the sperm took place very soon after ovulation in the normally mated

animal, but was delayed for four or more hours when sperms were placed in the peri-ovarian sac after ovulation. In the rabbit, if sperms were introduced into the fallopian tube a few hours before ovulation, most of the ova were fertilized, but very few were penetrated if sperms were introduced after ovulation. It was concluded that the mammalian sperm must undergo some sort of preparation in the female tract before it can penetrate the zona pellucida. He also considered that the evidence advanced up to date for the fertilization *in vitro* of mammalian ova was inconclusive. Entry of sperm into the vitellus from the perivitelline space was observed *in vitro*. The process seemed to be largely a function of the vitellus.—A. W. H. Braden.

Lesbouyries, G. & Lagneau, F. (1951). Gestations extra-utérines. [**Ectopic pregnancy.**]—*Rec. Méd. vét.* **127,** 257-285. 3213

Four main types of ectopic pregnancy, classified according to the site involved, were described in detail, numerous bibliographical references being quoted.—G. V. Laugier.

Koch, P. & Fischer, H. (1952). Erblich bedingte Blindgeburten von Fohlen eines deutschen Zuchtgebietes. [**Hereditary blindness in foals.**]—*Tierärztl. Umsch.* **7,** 46-48. 3214

Blindness in a case examined was caused by retinal detachment. A detailed pathological report of the eyes examined by W. Brandenburg is appended. The literature of congenital blindness in general was reviewed.—Roy Mack.

Allen, E. (1949). **Studies on degenerating sex cells in immature mammals. I. An analysis of degeneration in primordial and large germ cells in male albino rats aged 1-9 days.**—*J. Morph.* **85,** 405-421. 3215

The primordial cell degenerates by loss of cytosome, shrinkage of the nucleus and pycnosis, the large cell, which appears to arise by differentiation of the basal cell, by mitotic failure. After the ninth day only the basal cell remains.—C. W. Ottaway.

Robinson, T. J. (1951). **Reproduction in the ewe.**—*Biol Rev.* **26,** 121-157. 3216

Low prolificacy of the ewe is one of the factors which limits the sheep's ability to compete successfully with other stock in intensive agriculture. A study of the oestrous cycle and of response to treatment with hormones suggested that increased production can best be obtained by selection for a long breeding season and multiple births; in most breeds there is sufficient variation in these characteristics to offer hope of success.—G. B. S. Heath.

Thompson, D. S. & Schinckel, P. G. (1952). **Incidence of oestrus in ewes.**—*Empire J. exp. Agric.* **20,** 77-79. 3217

In most flocks at the beginning of the breeding season incidence of oestrus rises sharply about 16 days after rams are introduced to the ewes.—G. B. S. Heath.

Scott, I. W. (1952). **Uncontrolled matings cause loss of dairy production. Survey shows prevalence of short lactations.**—*Agric. Gaz. N.S.W.* **63,** 177-180. [Part of author's summary copied *verbatim.*] 3218

Analysis of data relating to calving and mating of dairy cows, obtained during a survey conducted concurrently with the recording of group herds in 1949-50, revealed the disturbing extent to which uncontrolled mating caused loss of production by shortening lactations.

The figures for that year (228 herds) show that approximately 80 per cent. of fertile cows mated either earlier or later than the time which would give maximum production and health of the animals.

*See also absts.* **3093-3094** (abortion in ewes); **3112** (immunization of mares by their mule offspring); **3244** (report, U.S.A.).

## ZOOTECHNY

Pino, A. (1951). La valeur étiologique des sillons cornés chez les chèvres. (Contribution à la connaissance de l'âge chez *Capra hircus.*) [**Judging the age of goats by study of the rings on the horns.**]—*Bull. Acad. vét. Fr.* **24,** 441-443. 3219

The horns of over a thousand goats of various breeds were examined for a period of four years. A groove encircles each horn at one year of age. The maximum variation in its date of appearance was 15 days. Over the four years an additionl groove appeared each year.

—R. N. Smith.

Formston, C. (1951). **Equine castration.**—*Vet. Rec.* **63,** 18-20. 3220

A strong appeal for the castration of equine animals as foals. The technique adopted on 18 foals was described and details of anaesthesia, preparation of site and surgical procedure were given.—G. V. Laugier.

Staśkiewicz, G. (1951). Hormonalna kastracja świń. [**Hormonal castration in swine.**]—*Med. weteryn.* **7,** 315-316. 3221

In male goats hormonal castration proved to be effective. In gilts 90% success was

obtained when they were treated between 8–16 days after the commencement of oestrus. Use of hormones during oestrus only causes prolongation of it.—JOHN R. MITCHELL.

THIENPONT, D. (1952). L'industrie des cuirs et peaux au Congo Belge. **[The hides and skins industry in the Belgian Congo.]**—*Bull. agric. Congo. belge.* 43, 97-110. [In French. Flemish summary.] 3222

Methods of curing hides and skins were briefly described, together with the causes of defects in skins. Warble flies do not exist in the Congo. Shade drying under suitable conditions, preferably in brick partly open sheds, was recommended. Light pretannage with black wattle tannin was proposed as alternative to curing.

—S. E. FOX.

FRANKLIN, M. C. (1951). **The drought feeding of sheep.**—*Aust. vet. J.* 27, 326-333. 3223

The quantity of fodder (grain, hay and silage) which would be available for stock feeding in Australia during a widespread drought represents only 3–4 weeks' food supply for all the sheep, cattle and horses in the country. The drought problem is considered primarily as a problem of fodder conservation. F. appealed for the wider application of existing knowledge as well as for an extension of that knowledge.

Two of the most notable recent advances in the investigation of drought feeding problems were discussed. The first concerns the value of climatological data in defining the approach to the problem in certain areas. The second presents convincing evidence of the superiority of intermittent (in this instance, weekly) feeding over daily feeding when sheep are being hand-fed for survival. Under conditions involving heavy grain feeding, sheep fed weekly showed a lower mortality rate, produced more wool and were brought through a drought of one year's duration at lower cost than similar groups fed daily on the same rations.

—R. L. REID.

MOULE, G. R. (1951). **Drought feeding of sheep.**—*Aust vet. J.* 27, 334-339. 3224

The subject was considered in the light of drought conditions in Queensland. Modification of grazing pressure in relation to the climatic pattern in different localities and the question as to whether food should be transported to drought-stricken areas or whether sheep should be moved to where fodder is produced and stored were discussed. Details were given of intensive methods in current use in Queensland when large numbers of sheep are being hand-fed.—R. L. REID.

STORMONT, C. (1951). **The increasing importance of blood groups in livestock production.**—*Calif. Vet.* 5, 20-21 & 28. 3225

Blood group evidence assists in identifying individual animals and in revealing fraudulent submission of blood samples from one animal passing for samples from a herd. The evidence also assists in determining parentage, and the blood groups of bulls used for artificial insemination are recorded. The differentiation of monozygotic from dizygotic twins is also aided by blood group investigation [but less so than in man]. The freemartin can often be diagnosed in a similar way by using blood group evidence to show that mixture of the twin circulations is likely to have occurred *in embryo*. Finally, in the diagnosis, prevention and treatment of haemolytic disease of the new-born, blood group study is paramount.—G. FULTON ROBERTS.

MAUNDER, J. C. J. (1951). **Beef cattle production on some of the Gulf watersheds.**—*Qd. agric. J.* 72, 45-60 & 176-183. 3226

In 1949 a general survey was made of beef cattle production in the area lying between the Gilbert and Mitchell Rivers and including the marine plains abutting on the South East of the Gulf of Carpentaria. Most of the area is low in fertility, consisting of poor forest country carrying only two beasts per sq. mile, and river frontage country which, although carrying 80% of the cattle (up to 12 beasts per sq. mile) appears to be unsuitable for supplementary fodder crops. The coastal country, 6,000–7,000 sq. miles in area, appears to offer the greatest potentialities for supervised and scientific development. It is essentially cattle country and any developmental scheme should be aimed primarily at creating an adequate reservoir in which large numbers of store cattle can be bred for fattening in the more favourable areas of North Queensland.

Cattle ticks (*Boophilus microplus*), buffalo flies (*Siphona* [*Lyperosia*] *exigua*) and long periods of severe nutritional deficiency place considerable demands upon the adaptability of the cattle. There are no herds of any straight British breed and only one herd with zebu blood in it. Various crossbreds, principally the Devon-Shorthorn cross are used. Because of the slow maturation of most of the crossbreds and the environmental conditions, cattle are 3–4 years old before they are moved to fattening areas. The principal aim of the breeder should be to produce a beast which can cope with the environmental conditions, and the zebu-cross on a strain of a British breed which has been produced in the environment should give better

results than the present system of importing bulls from vastly different environments. Use of comparatively resistant types, dipping 2–3 times per year with D.D.T. and vaccination should go a long way towards controlling the cattle tick, buffalo fly and bovine contagious pleuro-pneumonia.

Stock routes generally provide good outlets to the fattening areas and do not restrict movements. Under the prevailing system and at present (1949) store values, air freighting of station killed beef does not seem to be economically feasible.—P. K. Briggs.

Aparicio, G. (1951). La acción zootecnica en España en su aspecto oficial. [**Animal husbandry in Spain.**]—*An. Soc. vet. Zootec. Madrid.* **5,** No. 3. pp. 13-16. 3227

The author described in general terms the distribution and importance of domestic animals in Spain, and referred to the official side of animal husbandry, which has four main branches, namely, education, by the veterinary faculty of the University, control, by the Ministry of Agriculture, investigation and research, by the various Institutes of Animal Health, and Disease, and the direct approach, by the Societies of Animal Welfare.—I. W. Jennings.

Anon. (1950). **Animal husbandry in the Caribbean. Report of the Livestock Conference held in Trinidad, February 28-March 3, 1950.** pp. 378. Port-of-Spain, Trinidad: Caribbean Commission Central Secretariat, Kent House. [Mimeographed.] 3228

Only 21 pages of the report are devoted to the conference itself, the remainder consisting in detailed tabular summaries of existing conditions in regard to livestock and suggested measures for improvement. These surveys cover 11 countries (Barbados, British Guiana, the French Antilles, Jamaica, the Leeward Islands, Puerto Rico, Surinam, Trinidad and Tobago, the Virgin Islands, the Windward Islands and British Honduras), and the matter is dealt with in two sections: "Part IV" is set out according to subjects and "Appendix A" according to the geographical areas. "Appendices B and C" consist of tabular comparisons and lists of items of legislation in the territories under the "Caribbean Commission". All these countries and some others were represented at the Conference by delegates or observers, and observers were present also from the United Kingdom and from the Food and Agriculture Organization of the United Nations. The general subject for discussion in plenary session was "The place of livestock in the Caribbean economy". The Conference adopted nine general recommendations, the chief of which was that an Advisory Committee on Livestock, consisting of specialists in the various sciences and industries concerned, should be set up as a subcommittee of the Research Committee of the Agricultural Research Council of the Caribbean Commission.

—W. T. Thompson.

Montgomery, R. G. (1952). **Planning and construction of cattle yards.**—*N. Z. J. Agric.* **84,** 85-89. 3229

Hill country has been improved by decreasing the sheep and increasing the cattle population. This has involved the handling of large numbers of cattle in yards. Detailed plans of yards which have been found to be satisfactory are given.—G. B. S. Heath.

Goss, L. J. (1950). **Effects of nutrition and diseases on experimental animals.**—*Ann. N.Y. Acad. Sci.* **51,** 1057-1061. 3230

The importance of proper feeding and of disease control in laboratory animal maintenance was emphasized. It was urged that all publications dealing with the results of studies on animal societies should include a description of the strain, source, age, sex, accommodation, feeding, mortality, growth rate and reproduction rate of the animals employed, and of any diseases that may have occurred in the course of the studies.—Alastair N. Worden.

Lane-Petter, W. (1952). **Mechanics of the animal water-bottle.** [Correspondence.]—*Nature, Lond.* **169,** 465-466. 3231

The dimensions of a suitable water-bottle for laboratory animals were given, together with the factors affecting satisfactory working.

—S. E. Fox.

Rapoport, A. (1949). **Outline of a probabilistic approach to animal sociology.**—*Bull. math. Biophys.* **11,** 183-196. 3232

R. recorded the results of some exploratory mathematical work designed to investigate certain types of sociological or behavioral problem. These results are admittedly of an elementary nature, and are chiefly of interest to the non-mathematician in illustrating the method of approach. The calculations are based upon some simple examples of the "peck order" in fowls, and it is shown that on the basis of the random results of encounters between fowls the probability of a complete hierarchy in a society of three individuals is 3/4.

—Alastair N. Worden.

## TECHNIQUE AND APPARATUS

*See also absts.* **3052** (medium for *Salmonella*); **3110** (virus preservation); **3111** (Coombs test in haemolytic disease); **3116** (rabbit-ear cage); **3198** (evaluation of spermatozoa); **3231** (water-bottles for laboratory animals).

## MISCELLANEOUS

WHITE, C. (1952). **Unintentional confounding in medical research.**—*Lancet.* 262, 458-460. 3233

When it is impossible to decide whether results produced by two factors always associated in a survey or experiment, are due to one or the other or both, the factors are said to be confounded. There is a greater chance of undesired confounding when information is being sought through observation rather than experiment. The great contribution of the statistician to the solution of unintentional confounding has been his emphasis on the importance of random grouping in experiments.—W. R. BETT.

BEVERIDGE, W. I. B. [Professor of Animal Pathology and Director of the Institute of of Animal Pathology, University of Cambridge.] (1950). **The art of scientific investigation.** pp. xii+171. Melbourne, London, Toronto: William Heinemann Ltd. 10s. 6d. 3234

The review of this interesting book has unfortunately been delayed.

B. has approached this rather difficult subject by dividing it up into nine chapters, each dealing with a main factor that has bearing on the prosecution of successful research; Experimentation, Chance, Hypothesis, Imagination, Intuition, Reason, Observation, Difficulties and Strategy. In addition there is a chapter headed "Scientists", in which the author discusses discursively aspects of work done by different scientists and the approach of these scientists to their work.

The emphasis of the book is not so much on the training of research workers as on their psychology and on the atmosphere in which discoveries are made. The arguments are frequently illustrated by examples concerning particular discoveries mostly concerned with infectious diseases. These are drawn from the work of different scientists and from the author's personal experience. There is much here which will be of interest and value to the young scientist and to those in positions of authority who have it in their power to regulate and to assist the work of scientists. The word "Art" in the title has apparently been used advisedly as the author has shown that chance and flair have been important factors in many important discoveries. While that is so, there are many useful suggestions dealing with methods of training and the provision of circumstances which will enable chance and personal flair to produce fruitful results.

There are four plates each with portraits of four different scientists, ranging from Faraday and Mendel to some still living.

The book is well produced, with a good binding and a good subject index.

## REPORTS

CANADA. (1951). **Department of Agriculture. Report of the Director of Science Service for the year ended March 31, 1951.** [NEATBY, K. W.] pp. 40. Ottawa: Edmond Cloutier. [Items of veterinary interest pp. 3-10.] 3235

NEWCASTLE DISEASE has appeared in Canada and research is focused on the production of active immunity, the carrier question, histopathological study of the brain, the antigenicity of the virus, and the changes induced in them by propagation in other hosts.

It is thought that two or more aetiological agents may work symbiotically to produce RHINITIS of swine.

Several areas have been cleared of ox warbles. Cattle sprayed from an overhead boom are protected from attack by *Siphona* (*Lyperosia*) *irritans* for six weeks. 4% D.D.T.-fuel oil solution applied from aircraft at an average dose of about one quarter pound D.D.T. per acre effectively controlled mosquitoes for periods up to several weeks. *Simulium* were eliminated for a distance of 117 miles down stream from Saskatoon by one application of 88lb. of D.D.T. applied as a 10% solution in fuel oil, at a rate of approximately one part D.D.T. in 10 million parts water for 15 min.; fish were not affected.—G. B. S. HEATH.

AUSTRALIA. (1950). **Second annual report of the Commonwealth Scientific and Industrial Research Organisation for the year ending 30th June 1950. (1949-1950).** [COOK, G. A.] pp. 157. Canberra: L. F. Johnston, Govt. Printer. Items of veterinary interest pp. 36-59 & 64. 3236

A combination of streptomycin and penicillin in MASTITIS in cows caused marked reduction in staphylococcal counts but they increased rapidly when treatment was discontinued. Quaternary ammonium compounds were less efficient than sodium hypochlorite for sterilizing milking apparatus.

In a field trial to compare vaccination with "Strain 19" by subcutaneous (5 ml.) and tail (1·0 ml.) inoculation, there were 25% abortions in the control group and less than 1% in vaccinated groups. The "ring test" proved valuable.

Testosterone propionate implants reduced the incidence of SHEATH ROT in wethers.

No evidence was found of strain differences in the BOVINE CONTAGIOUS PLEURO PNEUMONIA organism. Penicillin had no bacteriostatic or bactericidal action on this organism. Streptomycin was bacteriostatic at 0·1 mg. per ml. but not bactericidal at 1 mg. per ml.

Paper chromatography was used in studies on urinary excretion of aromatic amines in relation to BOVINE CHRONIC HAEMATURIA.

*Anaplasma centrale* retained its infectivity for 736 days in blood stored at −80°C.

An outbreak of ABORTION in cattle was associated with a strain of the paracolon group.

Acaricides against *Boophilus* may be divided into three classes, (1) highly effective in preventing deposition of viable eggs but leaving a deposit which only for a short period kills invading larval ticks *e.g.* arsenic, parathion, benzene hexachloride (B.H.C.), (2) almost ineffective in preventing deposition of viable eggs but leaving a more lasting deposit of high toxicity to larval ticks (*e.g.* D.D.T.), (3) combining both useful properties (*e.g.* chlordane, toxaphene, dieldrin).

It was possible to make a reliable estimate of larval tick populations in the field. Studies on the non-parasitic stages of the tick revealed seasonal differences in fertility and length of pre-oviposition and incubation periods.

When stalled cattle were prevented from licking, up to 60% of larval ticks became adult, whereas only 20% became adult if cattle were permitted to lick.

*Linognathus pedalis* was eradicated from a flock by a footbath of 0·007%γ-isomer B.H.C. *Psorergates ovis,* the "itch mite", was not eradicated by dipping in 0·056% γ-isomer B.H.C., with and without wetting agents, in "phenolic" emulsion or in oil emulson, but mite populations were greatly reduced. D.D.T. 1%, toxaphene 0·1%, parathion 0·01% and copper sulphate 1%, tested by a "patch" method were ineffective. "Tetmosol" and colloidal sulphur gave encouraging results. D.D.T. and B.H.C. applied as a fog, killed *Damalinia ovis* on newly shorn sheep but were not completely effective against lice protected by longer wool. Such fogs were highly efficient against *Melophagus ovinus* even in long wool.

Spraying with 2% D.D.T. or 0·1% γ-isomer B.H.C. gave protection against BODY STRIKE in sheep during periods of moderate fly activity.

Taxonomic studies confirmed the morphological differences between *Lucilia cuprina* and *L. sericata.*

In coastal Queensland nematode infestation of sheep and cattle may take place at any time of the year because temperatures are rarely low enough to interfere with the development of the free-living stages. A monthly rainfall of at least 5 in. is necessary for outbreaks of HAEMONCHOSIS. *Cooperia* spp. can reach outbreak levels with lower rainfall.

Immunity in cattle to *H. contortus, B. phlebotomum, Cooperia* spp. and *B. radiatum* develops early in life. Immunity to *Ostertagia* spp. and *T. axei* may be delayed. Immunity to *B. phlebotomum* appears to be almost absolute.

Blood glucose levels were used as an indicator of the effect of various compounds on the oesophageal-groove reflex.

Phenothiazine in cattle is highly efficient only against *H. contortus* and *B. radiatum.* Hexachlorethane was effective only against *H. contortus.* Phenothiazine was less effective against *O. venulosum* than against *O. columbianum* in sheep. Doses of phenothiazine of 8–25 g. to ewes within two weeks before lambing did not cause ill-effects.

Hexachlorethane caused ill-effects including deaths of sheep. Affected sheep responded to calcium therapy.

Polychlorbenzene (1–3 ml.) and hydroquinone (1–3 g.) injected into the rumen were ineffective against *H. contortus.*

There were indications that "self-cure" may occur irrespective of the duration of the existing infestation. Adult sheep which had been on a low plane of nutrition for a year were highly susceptible to *H. contortus* and *Trichostrongylus* spp. Some sheep were still resistant to *Trichostrongylus* spp. while suffering severe malnutrition.

Injection of heat-killed *H. contortus* larvae into the rumen of infested sheep caused a transitory increase in titre of antibody but "self-cure" did not result. Antibody was transmitted in the colostrum. Serum from resistant sheep did not confer protection on lambs. In-

jections of histamine into the abomasum did not induce "self-cure". In some sheep, egg counts fell after inoculation with a *Salmonella typhimurium* vaccine.

When mature worms or larvae were exposed in sera from resistant sheep there was no precipitin formation at buccal or genital orifices. Positive sera reduced the respiration rate of adult *Trichostrongylus* spp. by 38%, and eggs incubated in positive sera with g. pig complement, embryonated but did not hatch. The effect on respiration rate of *H. contortus* was slighter and eggs hatched normally in positive serum.

*H. contortus* has a consistent seasonal trend associated with climatic conditions, a winter trough, a rise in spring, and peaks in early summer and autumn, punctuated with several "self-cure" periods. The seasonal trends for *Trichostrongylus* spp. and *O. columbianum* differed somewhat from the generally accepted picture. *Dictyocaulus filaria* reached its maximum within three months after birth and declined rapidly.

Radio-active phosphate was administered to sheep into the abomasum or intravenously and uptake by worms and tissues measured P.M. *Trichostrongylus* spp. took up more phosphate than did the small intestine, suggesting that they are tissue feeders and may also absorb phosphate *via* the cuticle. *H. contortus* absorbed as much phosphate as the abomasal tissue, suggesting that it is a tissue feeder but takes up little or no phosphate *via* the cuticle. *O. columbianum* also appears to feed on host tissue rather than gut contents.

Nutritional studies with sheep included the following: physico-chemical structure of the abnormally keratinized wool grown by copper-deficient sheep; utilization of urea; absorption of fatty acids; intermediary metabolism of fatty acids; ketone production; effect of diet on production of lactic acid and ammonia in the rumen; drought feeding; toxicity of wheat; vitamin A requirements, vitamin D supplements; CHRONIC FLUOROSIS (ingestion of water containing 10–20 p.p.m. fluorine for 3½ years did not adversely affect growth or wool production but did induce some degree of mottling of incisors and molars and selective abrasion of the latter); physiological function of cobalt (cobalt administered into the abomasum *via* a fistula may prevent development of deficiency); influence of molybdenum on metabolism of copper (use of liver biopsy has been valuable); intravenous injections of copper and liver storage; oral dosage of copper salts (less than 10% stored in liver); abomasal injection of copper sulphate; control of copper deficiency by infrequent massive doses; copper deficiency and storage and loss of iron from the liver; nutrition and breeding performance of ewes on cereal rations (lambs from ewes given a lime supplement were 50% heavier at weaning owing to increased volume and duration of lactation).

Further studies on TOXAEMIC JAUNDICE with reference to the influence of grazing on *Heliotropium europaeum*, CHRONIC COPPER POISONING of sheep grazing on *Trifolium subterraneum*, and the interaction of molybdenum and copper metabolism were reported.

Studies on reproductive physiology included cyclical activity in the non-pregnant ewe, development of reproductive activity in young ewes and young rams, early pre-natal mortality induced by hexoestrol, bio-assay (in g. pigs) of the oestrogenic activity of subterranean clover. Breeding and genetical studies included inbred flocks of Merinos, investigation of heterosis, polledness in sheep, breeding systems (sheep), strains of Merinos in several environments, development of hybrid dairy cattle (zebu crosses). Biological studies on skin and wool growth included comparative breed studies.

Other investigations of interest to veterinarians included neo-natal mortality in lambs, studies on the bovine skin, beef-cattle feeding, insect physiology and toxicology, and use of the virus disease, MYXOMATOSIS, in the control of rabbits.—H. McL. GORDON.

SOUTHERN RHODESIA. (1948). **Report of the Chief Veterinary Surgeon for the year 1947.** [HUSTON, P. D.] pp. 8. Salisbury: Rhodesian Printing & Publishing Co. Ltd. 3237

The professional staff consisted of 17 veterinary surgeons of whom one resigned and five were newly appointed during the year. There were also 65 Animal Health Inspectors at the end of the year.

MASTITIS is prevalent in dairy herds. Penicillin has been more successful than any other drug used in treatment.

Deaths from ANTHRAX reported were Salisbury district 13 and Buluwayo 2. In Fort Victoria there were 6 outbreaks but no record is given of the number of deaths.

T.B. is on the increase, especially in Umtali district dairy herds, where four deaths occurred. There was one death in Melsetter district and one Chipinga district. The abattoirs recorded 11 cattle and 31 pigs infected.

No increase has been reported in the number of outbreaks of CONTAGIOUS ABORTION. It has not been possible to apply any control measures.

Sporadic outbreaks of BLACKLEG occur. These are dealt with by the farmers who use the vaccine to protect their animals.

There were eight cases of TRYPANOSOMIASIS in the Chikwezo Reserve, probably introduced by tsetse fly from Portuguese East Africa travelling up the Ruenya river. In Chipinga district 38 cases were diagnosed, 10·5% died before treatment began. The others recovered after one injection of phenthridinium 1553. In Melsetter district three old standing cases failed to respond to this drug.

THEILERIASIS was reported from the following districts: Salisbury, 12 farms; Umtali 1; Melsetter, 3; and Fort Victoria, 4. Control is by dipping and hand dressing. On the low veld in Ndanga and Bikita districts the disease causes considerable mortality and is difficult to control owing to the impossibility of clearing the pastures of ticks.

Drought conditions causing movement of livestock and lack of water for dipping tanks have been causes of an increase in the number of outbreaks of PIROPLASMOSIS and ANAPLASMOSIS in Salisbury and Buluwayo Districts as well as in Matabeleland where losses of approximately 33·3% were caused.

Two fresh cases of EAST COAST FEVER (*Theileria parva* infection) occurred, one in the Chipinga district and one in Salisbury District. The outlook for controlling the disease was good as three months of the active tick season had passed without any fresh case.

An outbreak of F. & M. DISEASE was diagnosed on one estate in September. The disease had already spread to a neighbouring ranch and to African-owned cattle before it was reported and it then spread rapidly north and south along the pools of the Sabi River, where the cattle were concentrated. A cordon and cattle-free belt was established and in all concentrations of cattle where the disease was not spreading rapidly inoculations were given. In Chipinga area 3,998 of 10,786 cattle were inoculated and on Devuli Ranch 11,475 of 14,717 cattle were inoculated in December, when conditions were more favourable. An outbreak outside the cattle-free belt in November necessitated a new cordon and the inoculation of 8,607 cattle. Further infection occurred in the Chipinga District. It is suggested that the cloudy, damp weather in this District was more favourable to the virus than dry periods with high temperatures. It was expected that the advent of the rains when more pasture would be available would aid control measures.

Seven farms in Salisbury were found to be infected with INFECTIOUS EPIDIDYMITIS and VAGINITIS. All infected bulls were destroyed and the cows treated.

Mild cases of LUMPY SKIN DISEASE were reported in Salisbury, Gwelo, Buluwayo and Fort Victoria districts.

Considerable mortality from HEARTWATER occurred on the low veldt in Buluwayo and Fort Victoria districts, where there are "bont" ticks (*Amblyomma hebraeum*).

Gammexane dipping fluids have been tried in several dipping tanks. It was found that the gammexane fluid had to be replenished in the tank more frequently than is recommended by the makers. It appears that the fluid deteriorates in the dipping tank and there is no effective test for the gamma isomer, so that strength is difficult to regulate. The fluid does not appear to be effective against moulting larvae of the red-legged tick (*Rhipicephalus evertsi*) or in some cases with the adults of *Boophilus* sp. It is most effective when used in conjunction with arsenic, especially against *Boophilus* sp. When used by itself three-day dipping can be carried out on infected EAST COAST FEVER farms without ill effect to the cattle and it is in this respect superior to an arsenical dipping fluid. Gammexane fluid dip keeps down the number of flies in areas where it is used and there was a reduction in the cases of OPHTHALMIA and MYIASIS on several farms. It is most effective against lice and mange parasites.

HELMINTH INFESTATIONS have as usual been a cause of losses, particularly in Chipinga and Melsetter districts, where regular dosing is not carried out. LIVER FLUKE DISEASE amounted to 49·25% in 61,748 cattle slaughtered in abattoirs.

In meat inspection, the numbers of animals condemned for emaciation as compared with disease was 3,122 to 656. A large percentage of these were cows heavy in calf. The loss in meat is estimated as 900,000 lb. of beef. The total number of animals slaughtered was 249,431 and of these 177,883 were cattle.—J. A. GRIFFITHS.

THE GAMBIA COLONY. (1951). **The Annual Report of the Veterinary Department for the year 1950.** [FULTON, A.] pp. 12. Bathurst: Govt. Printer. 3238

The main veterinary problems reported on (apart from those of staffing) are RINDERPEST, BOVINE CONTAGIOUS PLEURO-PNEUMONIA, ANTHRAX, and various diseases of poultry. The last-mentioned accounted for 100 out of 148 laboratory examinations. RINDERPEST, of which there has been one small natural outbreak, was controlled by immunization with fresh fluid lapinized vaccine, 32,773 cattle being so treated.

Bovine Contagious Pleuro-Pneumonia was also treated by immunization. Anthrax occurred in herds kept on marshy land, and attempts are being made to vaccinate exposed animals.—W. T. Thompson.

Colony of Seychelles. (1950). **Annual report of the Department of Agriculture for the year 1950.** pp. 28. Victoria, Mahé-Seychelles: Govt. Printing Off. [Report of Veterinary Division pp. 10-16.] 3239

The veterinary service is in its infancy, the veterinary officer having been appointed only in November, 1950.

There were no indigenous cattle on the island, the present creole stock of mixed race coming from France, India and other countries. The present breeding policy consists of grading up local stock and crossing the Sindhi and Friesian breeds, a few of the latter having recently been imported.

It is proposed to increase milk production to reach 400,000 pints a year by 1955. The cattle slaughtered for food amounted to 502 head.

Poultry breeding is carried out at two centres, but no sheep breeding centre has been maintained.

No outbreaks of contagious disease occurred amongst cattle, pigs or dogs, but Fowl Pox was detected in several poultry units.

No dogs nor any livestock were imported during the year and the quarantine stations were unoccupied.—D. S. Rabagliati.

Cyprus. (1948). **Annual Report of the Chief Veterinary Officer for 1948. Appendix I.** [Roe, R. J.] pp. 5. [fcp.] [Mimeographed.] 3240

Details are given about staff, about livestock numbers and about routine inspection work etc.

The disease position was good throughout the year and no cases of TB. in cattle, Blackleg, F. & M. Disease, Rabies, Sheep Pox or Goat Pox were reported and only one case of Anthrax. Compulsory vaccination of sheep and goats against Anthrax continued with a South African avirulent strain. There were four cases of Tetanus. Four cases of Spirochaetosis were reported in poultry and 11 minor outbreaks of Fowl Typhoid; vaccine prepared from the latter had yet to be tested. A severe form of Coccidiosis was seen in imported goats in quarantine. There were six cases of Contagious Pustular Dermatitis. One case of Fowl Pox occurred; a vaccine was made from scabs obtained from the Ministry of Agriculture in England. Four very mild outbreaks of Bluetongue were reported; a vaccine was prepared in the laboratory from an Onderstepoort virus and the disease has not been seen in areas where this was used. The ox warble fly has been eradicated but the goat warble still occurs and infests cattle. The sheep nostril fly, *Oestrus ovis*, affected sheep and goats and probably caused many individual deaths. Parasitic Gastro-Enteritis takes a heavy toll of sheep and goats; the use of phenothiazine is encouraged, and copper sulphate/nicotine mixture is used free. *Cysticercus cellulosae, Echinococcus* and *Fasciola* are frequent causes of condemnations in the abattoirs. A veterinary hospital is maintained at Nicosia.—R. G. Mares.

Fiji. (1951). **Annual report of the Senior Veterinary Officer, 1950.** [Ohman, A. F. S.]—*Ann. Rep. Dep. Agric., Fiji,* 1950. pp. 15-24. 3241

An animal census in 1950—the first taken since 1942—shows an increase in poultry and a decrease in cattle, particularly females; the latter has affected the milk and meat supplies and the related industries. Some livestock have been imported to improve breeds. Control of TB. has received much attention, and so have attempts to overcome Helminth Infestations. Bovine Abortion has decreased as the result of inoculation against Brucellosis. Feeding experiments are in progress in order to discover the sources of Plant Poisoning among cattle, goats and horses.—W. T. Thompson.

Republic of Ireland. (1951). **Twentieth annual report of the Minister for Agriculture. 1950-51.** [Walsh, T.] pp. 188+84. Dublin: Stat. Off. 5s. [Items of veterinary interest pp. 40-42; 46-55 & 90-99.] 3242

A central artificial insemination station was opened in County Meath; there eight high-class bulls are kept. There are subsidiary stations to serve other areas.

The number of entrants to the Veterinary College of Ireland have fallen slightly. In its Physiology and Biochemistry Department pregnancy diagnosis tests were made on 285 specimens of blood or urine from mares. Electrocardiographic studies were made on horses suspected of heart disease. The Pathology Department examined 162 samples of milk, of which 85 were negative. The total of necropsies for the year was 2,315, the subjects including cattle, horses, dogs, cats, sheep and Zoo animals. The Parasitology Section examined 282 specimens, including *Strongylus vulgaris, Trichostrongylus,* Hookworm and Ascarid Infestations. Examinations of meat and meat products were carried out by a special section, and experiments made on the prevention

of bacterial damage. Other special sections dealt with poultry, carrying out 12,216 necropsies and 687,943 blood tests. In the Clinical Department, which had over 8,000 patients, intramedullary bone-pinning for fractures was introduced and new anaesthetics were tested.

The Research Laboratory of the Department examined 1,618 specimens and samples for TB. and carried out 292 necropsies. Among the cases of POISONING investigated were ewes treated with carbon tetrachloride and a cow dosed with hexachlorethane. The Biochemistry Section made 895 tests of blood and nearly 300 other examinations. Vaccines were provided against BLACKLEG, 149,500 doses and BRAXY, 81,110 doses, as well as against CONTAGIOUS ABORTION (2,012 doses). Research on BOVINE INFERTILITY in immunized and non-immunized herds showed that *Brucella abortus*, Strain 19, to be effective, must be used in conjunction with hygienic measures. In an investigation of milk samples in relation to MASTITIS, out of 1,453 individual samples 1,026 were negative and 335 were positive for streptococci. The Swine Diseases Section have made studies of OEDEMA DISEASE OF PIGS, which tend to show that a toxic factor is developed in the small intestine.—W. T. THOMPSON.

SWEDEN. (1951). Veterinärvård vid armén år 1950 av överfältveterinären. [**Annual report of the Army Veterinary Services, Sweden, 1950.**] pp. 18. Sveriges Officiella Statistik Hälso- och Sjukvård. Stockholm: P. A. Norstedt & Söner. 3243

In 1950 there were 31 veterinarians in the Army Veterinary Service, and 75 in the reserve. 7% of the 4,410 horses required treatment, mostly for troubles in the limbs and joints. Tables give the occurrence of different diseases and accidents in the horses and dogs.

—H. BOYD.

U.S.A. (1950). **Department of Agriculture, Report on the Agricultural Experiment Stations, 1949.** pp. 158. Items of veterinary interest pp. 56-74. Washington, D.C.: U.S. Govt. Printing Off. 35 cents. 3244

Selective breeding to produce strains of poultry resistant to FOWL-TYPHOID and COCCIDIOSIS has given encouraging results. Vitamin $B_{12}$ has been prepared in pure crystalline form and study of its effect upon poultry has begun. A growth factor for chickens has been demonstrated in soil.

STIFF LAMB DISEASE can be prevented by administration of tocopherols to the pregnant ewe.—G. B. S. HEATH.

## BOOK REVIEWS

HEIDEGGER, E. (1952). Wurmtafeln zum Bestimmen der wichtigsten Haustierparasiten. [**Identification tables for helminth parasites of domestic animals.**] pp. xii + 150. Stuttgart: Ferdinand Enke. 2nd Edit. DM 18. 3245

As its title implies this little book provides an aid to the laboratory identification of the common parasites of domestic animals. The introductory sections are devoted to accounts of some methods used in the identification of the parasites and to accounts of some of the life-histories which are illustrated with diagrams.

The identification tables are arranged under the different hosts. The situations in which the parasites are found are recorded and brief notes are given on the developmental cycles. The characteristic features by which the parasites may be identified are brief and concise and in many cases are supplemented by small diagrams.—L. P. JOYNER.

BAUER, H. & ZIMMERMANN, P. (1951). Verhütung und Bekämpfung der Geflügelkrankheiten. [**Diseases of poultry.**] pp. 176. Stuttgart: Eugen Ulmer. DM. 4.50. 3246

This little guide to the prevention and control of poultry diseases is one of a series of agricultural publications. A fair amount of information useful to the breeder and the fancier has been packed into a comparatively short space. There are sections on hygiene, feeding and breeding in relation to control of disease, infectious diseases and diseases of organs and an appendix consisting of a *post-mortem* diagnosis chart, author and subject indexes and a short bibliography. There are 32 illustrations.

—E.G.

HOFFBAUER, F. W. [Edited by.] (1951.) **Liver injury. Transactions of the tenth Conference May 21-22, 1951, New York, N.Y.** [Sponsored by the Josiah Macy, Jr. Foundation.] pp. 320. New York: Josiah Macy, Jr. Foundation. $3.75. 3247

At this Tenth Conference [for review of Transactions of the Ninth Conference, see *V.B.* 22, 2324], the subjects forming the focal points of informative and stimulating discussions were: Serum proteins and lipids, studied by ultracentrifuging undiluted untreated whole serum (opener, R. H. Turner); mechanism of the action of lipotropic factors (chiefly choline) in animals (C. Artom); Action of lipotropic factors in man, with special reference to phos-

pholipid turnover in patients with liver damage (D. Cayer); Experimental ischaemia of the liver in the dog, and hepatic coma (A. M. Rappaport); Micro-anatomy and physiology of the hepatic vascular system (B. G. Maegraith); The effect of insulin on the glucose output of the liver in normal and diabetic man (S. Sherlock, A. C. Bearn, and B. Billing); Liver disease in Jamaican children (K. R. Hill).

It can be said that this book should be read by all interested in liver diseases.

—E. Cotchin.

Jepsen, A. (1951). Veterinaer maelkekontrol. II. Teoretisk del. Maelkens kemi og mikrobiologi, maelkehygiejne, patologi og epidemiologi. [**Veterinary milk control. II. Theory. Chemistry and microbiology of milk, milk hygiene, pathology and epidemiology.**] pp. xx+370. Copenhagen: A/S Carl Fr. Mortensen. Kr. 73. 3248

Part I of this work dealing with practical milk control was published in 1944. This second volume dealing with the theory and scientific data of milk control work in the laboratory is, of course, complementary. It is comprehensive and amounts to quite a formidable volume. It has sections on the chemistry of milk, physical properties, physiological variation, nutritive constituents, normal microbiology, pathogenic bacteria carried by milk and on milk-borne diseases, infections of the udder causing mastitis, milk hygiene and preservation, and milk products.

The mass of information set out is of world-wide origin. The legal considerations which are often quoted are mainly of Danish enactment, as also are most of the statistical data.

This is a good treatise on the subject and a good source of information, especially about conditions in Denmark, where standards are high.—J. Edwards.

Mathieu & Korkhaus, R. (1951). Tierschutz-Taschenbuch. [**Protection of animals manual.**] pp. 183. Hanover: M. & H. Schaper. 5th Edit. DM. 6. 3249

The purpose of this little book is to propagate the idea of prevention of cruelty to animals and to give wider knowledge of the relevant German animal protection laws.—E.G.

Buros, O. K. [Edited by.] (1951). **Statistical methodology reviews 1941-1950.** pp. 340. New York: John Wiley & Sons, Inc.; London: Chapman & Hall, Ltd. 56s. 3250

A review of reviews is not altogether out of place in scientific literature, especially when prefaced by an adequate editor's apology. The editor's main thesis is that the opinions of eminent reviewers will help a prospective purchaser to select his textbook. Among secondary considerations, he feels that this collation will contribute to improving the standard of reviewing, by enabling readers to compare essays on the same book culled from a number of journals in the English language.

The contents are simply the reviews—suitably pruned—of the textbooks on statistical methodology that have appeared in the principal scientific journals of England and America in the last decade. The work is clearly intended for the reference library.—F. B. Leech.

## BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review.]

Bradley, S. E. (Edited by). (1952). **Renal function. Transactions of the third Conference October 18-19, 1951, New York.** [Sponsored by the Josiah Macy, Jr. Foundation.] pp. 210. New York: Josiah Macy, Jr. Foundation. $3.50.

Bratlie, O. (1951). Laerebok i maskinmjølking. [**Handbook on machine milking.**] pp. 88. Oslo: Norske Melkeprodusenters Landsforbund.

Clark, W. E. Le Gros. (1952). **The tissues of the body. An introduction to the study of anatomy.** pp. xi+407. Oxford: The Clarendon Press. London: Geoffrey Cumberlege. 3rd Edit. 30s.

Götze, R. (1952). Dammrissnaht, Plastik der Vulva und des Scheidenvorhofes bei Stuten und Kühen. [**Repair of the perineum and plastic operations on the vulva and vestibulum in mares and cows.**] pp. 52. Hanover: M. & H. Schaper. 4th Revised Edit. DM. 3.80.

Grignani, A. (1951). Il libro del mungitore dell'allevatore del tecnico della stalla. [**A handbook of the husbandry of dairy cattle.**] pp. vi+194. Pavia, Italy: M. Ponzio. L. 800.

Harvey, W. C. & Hill, H. (1952). **Food hygiene.** pp. viii+511. London: H. K. Lewis & Co. Ltd. 35s.

HAYES, M. H. (1952). **Points of the horse. A treatise on the conformation, movements, breeds and evolution of the horse.** pp. xxvii + 540. London: New York: Melbourne: Sydney: Cape Town: Hurst & Blackett Ltd. 6th (Revised) Edit. 63s.

HINSHAW, W. R. & ROSENWALD, A. S. (Edited by RUBO, M.) (1951). **Turkey diseases.** pp. viii + 108 (paging in sections). Berkeley, California: Agric. Exp. Sta. Ext. Serv. Manual 3. $1.00.

KAREL, L. & ROACH, E. P. (Compiled by). (1951). **A dictionary of antibiosis.** pp. vii + 373. New York: Columbia University Press. $8.50.

LEUTHOLD, A. (1952). Grundriss der Speziellen Chirurgie für Studierende und Tierärzte. **(Special veterinary surgery).** pp. 283. Basle: Ernst Reinhardt. Swiss Fr. 15.50.

MACGREGOR, R. (1952). **The structure of the meat animals. A guide to their anatomy and physiology.** pp. 238. London: The Technical Press Ltd. 20s.

OELKERS, H.-A. (1950). Pharmakologische Grundlagen der Behandlung von Wurmkrankheiten. **[Pharmacology of anthelmintics.]** pp. xii + 243. Leipzig: S. Hirzel. 3rd Edit. DM. 12.80.

OVEREND, W. G. (1951). **The use of tracer elements in biology.** pp. x + 57. Melbourne: London: Toronto: William Heinemann Ltd. 3s. 6d.

RALLI, E. P. (Edited by). (1952). **Adrenal Cortex. Transactions of the Third Conference November 15-16, 1951, New York.** [Sponsored by the Josiah Macy, Jr. Foundation.] pp. 204. New York: Josiah Macy, Jr. Foundation. $ 3.25.

REINHARDT, R. (1952). Die Krankheiten der Katze. Mit Ausführungen über Abstammung, Rassen, Züchtung, Haltung und Richten. **[Diseases of the cat.]** pp. 192. Hanover: M. & H. Schaper. 2nd Edit. DM. 6.

RODENWALDT, E. & BADER, R.-E. (1951). Lehrbuch der Hygiene. **[Textbook of hygiene.]** pp. ix + 823. Berlin: Springer-Verlag. DM. 68.70.

SCHNELLE, G. B. (1950). **Radiology in small animal practice. A text on applied radiography and diagnosis.** pp. xv + 365. Evanston. Ill. The North American Veterinarian, Inc. $8.00.

SCOTT, J. C. (1952). **Health and agriculture in China. A fundamental approach to some of the problems of world hunger.** pp. 279. London: Faber & Faber Ltd. 25s.

SHOCK, N. W. (Edited by). (1952). **Problems of aging. Transactions of the fourteenth Conference September 7-8, 1951, St. Louis, Mo.** [Sponsored by the Josiah Macy, Jr. Foundation.] pp. 138. New York: Josiah Macy, Jr. Foundation. $3.00.

THORNTON, H. (1952). **The inspection of food. A handbook for students of public health, agriculture and meat technology.** pp. 223. London: Baillière, Tindall & Cox. 12s. 6d.

VOGEL, H. (1951). Die Antibiotica. Grundzüge der Chemie und Physiologie der mikrobiellen Hemmstoffe. **[Chemistry and physiology of antibiotics.]** pp. xii + 528. Nuremberg: Hans Carl. DM. 38.

WILSON, G. S., BLACKLOCK, J. W. S. & REILLY, L. V. (1952). **Non-pulmonary tuberculosis of bovine origin in Great Britain and Northern Ireland.** pp. 108. London: The National Association for the Prevention of Tuberculosis. 16s.

WOOLLEY, D. W. (1952). **A study of antimetabolites.** pp. xiii + 269. New York: John Wiley & Sons, Inc.; London: Chapman & Hall Ltd. 40s.

ZIRKLE, R. E. (Edited by). (1951). **Biological effects of external beta radiation.** pp. xxv + 242. New York: Toronto: London: McGraw-Hill Book Company, Inc. 28s.

ANON. (1952). **Iodine pharmaceuticals. A checklist of iodine compounds and preparations.** pp. vi + 78. London: Chilean Iodine Educational Bureau. 2s. 6d.

ANON. (1952). **Symposia of the Society for Experimental Biology. No. VI. Structural aspects of cell physiology.** pp. vii + 357. Cambridge: The University Press. 45s.

ANON. (1951). **Manual of tumor nomenclature and coding.** pp. 119. New York: Statistical Research Section, American Cancer Society. $2.50.

ANON. (1952). **Iodine content of foods. Annotated bibliography 1825-1951.** pp. 183. London: Chilean Iodine Educational Bureau. 21s.

Printed in Great Britain by CHARLES BURRELL & SON, Chertsey, Surrey.

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| | Commonwealth Bureau of Pastures and Field Crops, Aberystwyth. | |
| 36. | The grasslands of Latin America. By Miss G. M. Roseveare. Late 1946 ... | 20s. 0d. |
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